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Some Gastric and Intestinal Conditions met with in the Dog.*

By J. G. Wright, F.R.C.V.S., Cardiff.

I greatly appreciate the honour the Council of this Division has paid me in asking me to read a paper to you this afternoon; especially as I am one of your newest members. The subject selected was "Gastric and Intestinal Diseases of the Dog." I immediately realised, however, that this title covers an enormous number and variety of conditions, far more than we can deal with in the short time at our disposal, and for this reason I propose to deal with the common conditions with which we come in contact; and these entirely from a clinical standpoint.

Our knowledge of the etiology and pathology of many of these conditions is as yet, unfortunately, very incomplete, and offers a great field for veterinary research, which I earnestly hope will be forthcoming in the near future, as the result of the great amount of publicity this branch of our work is, at the moment, receiving.

As clinicians, diagnosis and treatment are our foremost concern, and it is with these that I hope I will be able to bring forth a few points which will serve to promote a keen and instructive discussion.

I propose to group my remarks under the headings:—

1. Gastric and intestinal diseases occurring during the course of specific diseases.
2. Gastric and intestinal disturbance of a non-specific nature and including traumatic injuries and foreign bodies.
3. The differential diagnosis of conditions, the symptoms of which greatly resemble gastric and intestinal lesions, but which have no direct association with the alimentary tract.

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The first group includes the two conditions, canine distemper and the so-called canine typhus or Stuttgart disease.

Distemper.

It is customary amongst text-book writers to describe this disease as being of a certain type, *i.e.*, the respiratory type, the nervous type, the gastro-enteric type; as though each was enclosed in a water-tight compartment; whereas, in practice, one finds that symptoms of all types are exhibited by practically every case, and that in every case the alimentary canal is affected to a greater or lesser degree.

Most cases of distemper are ushered in by a bout of sickness, together with diarrhœa. This is usually associated with the first rise in temperature, about 4—7 days after infection occurs. The sickness usually subsides quickly, but the diarrhœa tends to persist for a few days. A sudden rise in temperature to 105°F., associated with diarrhœa and sickness, in a young and susceptible dog is, in my opinion, sufficient to warrant a diagnosis of distemper, and immediate isolation, together with treatment, should be forthcoming.

Following upon this is a period of comparative fitness, during which time the temperature is normal and appetite good; in fact, there is a complete absence of anything abnormal. This period varies in duration from 2—7 days, when the temperature suddenly rises again and persists, and from this stage the symptoms of the so-called typical distemper manifest themselves.

Inflammation of the stomach and intestines is a very common complication; in fact, in dogs under ten months, is almost invariable. In slightly older and stronger dogs the alimentary canal may escape. The condition may vary from a mild catarrh, quickly amenable to treatment, to a rapidly fatal hæmorrhagic type. The stomach and intestines are by no means evenly involved; in some cases vomition is the predominant symptom, whilst in others enteritis with diarrhœa is uppermost. The animal loses condition very rapidly and when the condition is severe may become greatly emaciated in 3 or 4 days. This is especially the case in the hæmorrhagic type, which we have found so common in cases of distemper amongst Greyhounds of Irish breeding. In an article contributed to the *Veterinary Record* (August 4th, 1928, vol. viii., No. 31, p. 631) Mr. C. Wentworth Elam, of Liverpool, dealt with this condition, which he described under the heading "Pneumo-gastro-enteritis of Greyhounds," and which he differentiated from distemper. In my view, such a differentiation is not admissible; I do not regard as a separate entity the condition described by Mr. Elam.

Frequent vomition is a constant symptom when the stomach is affected. The vomit is of a frothy, turbid liquid, which is either shiny or muco-purulent. It may or may not be tinged by bile. Frequently it is streaked with blood as the result of rupture of small vessels. In very acute cases the whole vomit may be diffused with blood. There is a complete loss of appetite with increased thirst. In common with all cases of gastro-enteritis of bacterial origin, the mouth is affected. The gums become congested and spongy at the borders and the teeth are coated with a yellow, fœtid film. This may extend to a necrotic ulceration of the gums and insides of the cheeks, but necrosis of the tongue is not common in distemper.

Enteritis is probably more common in association with this disease than is gastritis. In many cases in which the appetite is fairly well maintained and when vomition is only occasional, there is a marked enteritis with diarrhœa. Here again these remarks apply especially to young dogs up to nine months. The nature of the fæcal matter varies; sometimes it is of a creamy consistence and bright yellow in colour, whilst in others there are flakes of solid matter, often undigested food, together with a lot of gaseous fluid.

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Evacuations are frequent; often a dozen or more in the course of twenty-four hours. There is considerable straining, and consequent upon this the ejection of small quantities of blood.

In the hæmorrhagic type the evacuations are usually of the consistence of milk and are evenly diffused with blood.

The course of the condition varies greatly according to the age and constitution of the patient. In adult animals (and by this I mean animals over 11 months) in 14—21 days one will usually see a complete recovery. In many cases, especially if the animal is under nine months, the onset of nervous symptoms necessitates the animal's destruction, whilst in others, especially the hæmorrhagic type, septicæmia rapidly sets in and death occurs within two or three days of the onset of serious symptoms.

I have met many cases in animals between the ages of 7 and 10 months in which the condition becomes one of a chronic catarrhal enteritis. Diarrhœa is persistent and there is considerable emaciation. Associated with this is a chronic catarrhal conjunctivitis. The appetite, however, is usually good, but if unsuitable food is given it will pass through the alimentary canal unchanged. Such cases may persist for six weeks to two months and, provided there is no evidence of serious nervous derangement, should be persevered with, as there is often a complete recovery. Frequently, however, the owner's patience unfortunately becomes exhausted. Referring here to the onset of nervous symptoms, the *bête-noir* of distemper, it is impossible to foresee their onset. They may occur many weeks after an apparent recovery. I have frequently encountered in puppies of 3—4 months cases of obscure gastritis and enteritis, together with marked flatulence. The appetite is capricious and there is loss of flesh. The temperature has been either normal or at most only raised to 102·5° and one has been inclined, in the absence of anything more typical, to ascribe the condition to ascarides, or a mechanical gastro-enteritis, the result of eating coal, etc., and it is not until some two or three weeks or even a month later, when the typical nervous symptoms of distemper arise, that one realises that it is the great dog scourge with which one is dealing.

TREATMENT. The case being one of distemper, good nursing and hygiene are a *sine qua non*.

Diet.—In the place of water I substitute albumen water (made by beating up the white of an egg in a half-pint of warm water and adding a half teaspoonful of sugar). In all cases of gastro-enteritis there is increased thirst and I find that animals that refuse milk will take this nourishing liquid. Barley water is also useful in this connection. Milk, if taken, should be diluted with a third part of water and a little sugar added. It may be given *ad libitum*, and it is wise to add egg-white to it. Whilst diarrhœa persists meat and beaf tea are best withheld, but beef tea should be given once diarrhœa is overcome. The proprietary milk foods, such as Benger's, etc., are quite good, as also is Virol, which can be smeared upon the tongue. As the convalescent stage is reached boiled fish and finely cut-up boiled beef should be given in small quantities frequently.

Forced feeding should not be resorted to unless it is absolutely essential, and then egg-white and milk, Virol and Valentine's beef extract are the best. The so-called nutrient clysters are of very doubtful efficacy.

Owing to the great variation in size of our patients it is difficult to lay down a hard and fast rule as to the quantity of food to be given. In the high febrile stages the white of an egg or two and a half pint of milk will suffice for a 10lb. Peke; an Alsatian can take half dozen eggs and a quart of milk daily.

Medicinally.—Bismuth is one of the most useful drugs that we have for gastric and intestinal cases: bismuth carbonate, to which may be added a little bicarbonate of soda and heavy carbonate of magnesium. It is best given in the form of a mixture with a little water and every four hours, half an hour or so before food. The aromatic tinctures usually prescribed with these drugs in human practice are not indicated, as they only tend to nauseate the patient.

The carbonate of bismuth (2½—20 grains) is very useful where there is persistent diarrhœa; it may be combined with a little Dover's powder (grs. 2½—20). This latter preparation, however, I find tends to aggravate gastric cases. In these, liquid preparations of bismuth are useful, as mist. bismuthi co. *c.* pepsin B.P., which, in addition to containing liquor bismuthi has a little HCN, tinct. nuc. vom. and morph. hydrochlor. (℥. xx—℥i.)

In cases where vomition is most acute and even bismuth salts are returned, I find chloretone (Parke, Davis and Co.) given in capsule (gr. ii—x) the best resort, and in such cases no attempt at feeding should be made for twenty-four hours.

Salol and other salicylates, although frequently recommended in text-books as reliable alimentary disinfectants, I have discarded, as I find that they invariably provoke vomition in the dog.

Glycerine of carbolic acid (℥. i—x) may be given as an intestinal antiseptic, but it must only be used with care, owing to the dog's susceptibility to carbolic poisoning.

"Dimol"—a preparation which, on paper, sounds very useful, I have not found satisfactory.

In cases of chronic enteritis and colitis of a persistent nature which fail to respond to bismuth, I find formalin (40 per cent. formic aldehyde) most useful. I give it in doses of ½—3 minims (℥. i to a 15lbs. terrier) three times daily, well diluted; unless well diluted it may cause vomition. I find that it rapidly clears up a diarrhœa which other drugs have failed to touch. Its administration can be persisted with over a period of several weeks.

Copious douching of the colon with normal saline solution (NaCl a teaspoonful to a pint) is very useful, especially where the colon is involved.

CANINE TYPHUS. STUTTGART DISEASE. HÆMORRHAGIC GASTRO-ENTERITIS.

These names are given to an obscure disease of the dog, characterised by inflammation of the stomach and intestines, together with mouth lesions, the etiology and pathology of which is but very improperly understood. Whilst it is usually described as being contagious, there is no evidence as to the mode of infection, and all agree as to the frequent occurrence of sporadic cases.

The condition occurs in dogs of all ages, but frequently in animals between two and four years.

In practice, one is constantly coming in contact with cases of a sporadic nature without there being any evidence of contagion. The writer is of the opinion that cold is in some way a predisposing factor, and it is remarkable how often there is the history of bathing the dog just prior to the attack.

The symptoms are as follows:—The animal goes completely off its food and becomes exceedingly dull and listless. It searches for cold places to lie upon and its increased thirst is noticeable. Before one's arrival it is usually given castor oil, which it promptly returns.

Upon making an examination in the early stages, one finds the temperature and pulse normal. The gums and conjunctiva are slightly congested; the nose and extremities are rather colder than normal. In the absence of any acute symptoms one is apt to treat the case lightly; the condition is, however, extremely grave. About the third day after the onset of symptoms the vomition becomes most acute and the animal absolutely craves for water, which is immediately returned. The animal, which previously was in plump condition, is now noticed becoming rapidly emaciated. The breath has become extremely fœtid and the teeth coated with a greyish-black deposit, and the borders of the gums inflamed. Frequently there are areas of ulceration of the cheeks where they come in contact with the prominences of the molar teeth. From this stage the animal becomes progressively worse. In some cases diarrhœa sets in, whilst in others septicæmia occurs, and the temperature, which has at no time been raised, rapidly falls and death occurs from a general toxæmia. Frequently the whole illness has not extended over a week. As opposed to the previously-described condition, which is the acutest form, one meets the condition in a more chronic form. The animal has been a water drinker for some few weeks and the appetite has been irregular. Vomition has been frequent and there is a marked loss of condition. After a fortnight or so it is noticed that the breath, which is already fœtid, is considerably more foul, and examination reveals commencing necrosis of the tip of the tongue. One immediately realises the dread nature of the condition.

Another form the disease takes is that of a hæmorrhagic enteritis. Here again, the initial symptoms are marked dulness and listlessness, with increased thirst and foul breath. Complete inappetence is quickly followed by an evenly diffused, bloody diarrhœa. The abdomen becomes tucked up and loss of flesh is rapid. Here again, there is no evidence of contagion, and in-contact dogs, fed and housed under identical conditions, go free.

Provided early treatment is forthcoming I am convinced that many of the cases as previously described can be saved. Unfortunately, the owner, in many cases, takes the animal for a long and exhausting exercise, to "buck him up."

Immediately one comes in contact with these cases, the animal should be kept warm by rugging and in a room at an even temperature. Water should be withheld and replaced by albumen water. If vomition is acute, chloretone in capsule should be given and no effort at feeding made for twenty-four hours. In cases of vomition persisting a little cocaine (gr. ¼—i) may be given. If the temperature is subnormal or the extremities cold, hot water bottles should be applied. Having overcome the acute vomition, the animal should be placed on bismuth. If forced feeding is resorted to a little egg-white with milk and water should be given. I have frequently found that the animal will take a little ice-water in which has been placed Brand's Beef Extract. A hot saline enema should be given and repeated daily. I have used anti-colon bacillus serum to combat this complaint, but have not found it of great value. Proceeding upon these lines, recoveries are not unusual, but the animal should be kept housed and warm for at least three weeks, as relapses are common.

Gastritis and Gastro-enteritis in Aged Dogs.

In aged dogs I always regard the sudden onset of frequent vomition very seriously. In many cases it is the commencement of a train of symptoms which rapidly ends in death (usually in two or three days). The cases appear to be most common in toy dogs, especially those suffering from chronic pyorrhœa, alveolar periostitis, large accumulations of dental tartar and loose teeth.

On examination, one usually finds the temperature to be subnormal, and collapse rapidly sets in.

Post-mortem examination usually reveals a diffuse active congestion of the pyloric portion of the stomach, the duodenum and the first portion of the jejunum.

The long and continuous poisoning as the result of the foul mouth is undoubtedly the predisposing factor.

Traumatic Diseases.

In canine practice one is constantly coming into contact with cases of gastric and intestinal disturbance, the origin of which is often difficult to find. In many cases it is due to the presence of foreign bodies, which may or may not cause complete obstruction, in some part of the alimentary canal. The animal may be of any age. The temperature, in the early stages, is always normal (101—102°F.) and there is no evidence of great thirst. The appetite may be good, slightly impaired, or in complete abeyance. Vomition is an invariable symptom and there is usually constipation.

In cases of obstruction the symptoms vary according to the position, the nature of the foreign body, and also the length of time which has elapsed since the condition occurred.

Pieces of bone, irregular pieces of stone, pebbles, needles, etc., mutton bones (especially parts of the spine and tops of ribs) are the chief offenders. The condition is more likely to occur when two animals are fed together.

Dealing with pieces of bone, obstruction is most likely to occur in the œsophagus, in one of three places. Firstly, at the entrance to the chest and just anterior to the first pair of ribs. More often than not, however, it passes into the chest and becomes arrested in the thorax, usually in one of the following places—immediately in front of the heart, or immediately on the thoracic side of the diaphragm. Bodies obstructed anterior to the first pair of ribs can be felt from the outside and removed by œsophagotomy. The obstructed body is usually of such a size that a considerable opening is necessary and its removal often necessitates considerable tearing of the neck structures. The speaker does not insert any sutures, allowing free drainage, and although a fistula occurs for the first few days complete healing usually takes place in from 14—21 days.

The symptoms of an obstruction in the thorax are as follows:—The condition is immediate in onset. The animal is seen to arch its neck and to be continually gulping. Meat is usually taken eagerly, but immediately it is swallowed typical symptoms are manifested. The dog immediately shows signs of great discomfort; arching of the neck, gulping and swallowing occur; there is heaving of the flanks, until in a minute or so the animal vomits, often crying out as it does so. Frequently spots of blood are in the vomit. A probang passed down the œsophagus causes the animal great pain when it encounters the obstruction.

Liquids, however, if given in small quantities, often pass into the stomach and are retained.

When the condition is of some days' standing, the œsophagus frequently becomes perforated and a purulent pleurisy is set up, which tends to mask the original symptoms.

Apomorphine given hypodermically will provoke violent emesis and causes the animal great agony, but invariably fails to move the foreign body, and after the action of the drug has ceased the animal is usually exhausted.

Obstruction of the œsophagus by a piece of bone is very serious, and in 90 per cent. of cases eventually necessitates the animal's destruction. In many cases it is probably best to destroy it at once. If one does not feel confident of one's diagnosis, an X-ray photograph may be taken and, as the piece of bone is usually of a compact nature, its presence can be seen.

On several occasions the writer has performed laparotomy, opened the stomach and endeavoured to explore the œsophagus through the cardiac orifice, but without success. In fact, the difficulty encountered in removing the foreign body on *post-mortem* makes one realise the uselessness of this measure.

Since writing these notes; in fact, during the last few days, I have been dealing with a rather remarkable case of this nature which might incline one to modify one's views.

On Saturday, October 6th, I was asked to examine a Sealyham terrier bitch, aged 18 months, showing symptoms identical with those previously described, but rather less severe than is usually the case. Liquids were taken with ease and retained, but when meat was given the typical heaving and gulping was observed. The meat was returned in about ten minutes, after which the animal was comparatively easy.

The bitch was a noted prize-winner and destruction was not entertained, although one could not give a very hopeful prognosis. The bitch was fed with three eggs and a pint of milk daily and all solids were withheld. A teaspoonful of liquid paraffin was given every four hours. This treatment was persisted in for a week, until the oil was actually trickling from her anus. On the milk and egg diet loss of flesh was inappreciable. By this time the bitch, having, apparently, become accustomed to the condition, was quite bright, and it was only occasionally that arching of the neck with salivation occurred. Being very uncertain as to any benefit that could accrue from any operation, I decided to keep the bitch at my kennels for observation. On Monday afternoon this week I gave her a small feed of minced meat, and although it caused discomfort I noticed that she retained it. It was evident that the œsophagus was only partly occluded.

On Tuesday evening the bitch, with coaxing, took a fair meal of minced meat, and although she immediately showed discomfort she did not return it. About ½ hour later apomorphine gr. $\frac{1}{20}$ was given hypodermically, and with the first vomit up came the piece of bone, which I have here, together with the meat she had previously taken. It will be noticed that it has no sharp point, and no doubt the meat had dilated the obstructed œsophagus sufficiently to assist in the regurgitation. It had been in the œsophagus for at least thirteen days.

Foreign Bodies in the Stomach.

A frequent cause of a mild gastritis, which develops into a chronic condition, is the presence of foreign bodies in the stomach. Pieces of metal, nails, coins, rubber balls, etc., have all been found in the stomach of the dog on *post-mortem* examination.

The animal has a capricious appetite; it becomes a water drinker; vomition is frequent. It seeks cold places to lie upon. Frequent stretching of the abdomen is noticeable. The mouth, which is at first sweet, later becomes affected and loss of condition occurs slowly, but eventually becomes marked and eventually the animal dies from an obscure gastritis. An X-ray photograph may or may not solve the problem, according to the nature of the offending article. Such foreign bodies may remain in the stomach for years, the saccus cæcus often becoming sacculated to accommodate them; whilst in other cases they may rapidly pass into the small intestine where they form a complete obstruction.

I would here quote the case of a four-year-old Airedale. In February I was called to examine this animal, which had been suffering from stomach trouble for the previous six months. Condition poor. About a week previous to my examination the animal had cried out as though in pain during the night, and from that time onward vomition had been continuous. The animal was continually drinking and seeking cold places. The animal's temperature was 105°. Palpation of the abdomen, which was resented owing to the pain it caused, revealed an enlargement in the small intestine the size of a small orange, and in view of the history and the animal's condition the writer considered it a malignant growth and recommended destruction. *Post-mortem* examination revealed complete occlusion of the small intestine by a solid rubber ball. The intestine over an area of several feet was greatly congested and necrosis at the point of obstruction was advanced. Enquiries elicited that the ball had disappeared the previous midsummer and that the maid had remarked she thought the dog had swallowed it. It would appear to have remained in the stomach for six months, setting up a chronic gastritis, and then suddenly passed into the small intestine, where it became arrested about two feet from the pylorus.

Obstruction of the Small Intestine.

This condition is very common. The offending body usually has a smooth surface (otherwise it would probably have become wedged in the œsophagus) and such objects as pebbles and balls are common. The writer has had the condition set up by a plum-stone in a 7 lb. Peke.

The chief symptoms are those of discomfort with frequent vomition. Appetite is usually impaired, but the animal will take a little. Vomition does not occur immediately after food or water is taken. The temperature is usually normal (that is in the early stages, before there are any complications) and the mouth is quite sweet. The animal usually withholds emptying of the rectum, and for this reason the owner makes a diagnosis of constipation and oil is given.

Diagnosis.—In all cases of obscure origin a very careful palpation of the abdominal cavity should be carried out. A foreign body arrested in the small intestine can easily be felt through the abdominal wall, and the fact that it is in the small intestine is established by its movability. This factor may cause one to miss it. It can be pushed forward as far as the liver (the stomach probably being empty) or backwards as far as the pelvic brim, where it can easily be distinguished by a finger inserted in the rectum. This mobility serves to differentiate the condition from a case of vesicle calculus, from a kidney, or even the head of a fœtus *in utero*.

Neoplasms associated with the intestinal wall, however, will confuse one, but here one must be guided by the history of the case.

An X-ray photograph may be made, but is not necessary and may, of course, give no result.

Treatment.—This consists of immediate surgical interference. Provided the case is taken early, within three or four days of the occurrence, the operation can be performed with confidence. It consists of opening the abdominal cavity and withdrawing the affected loop of bowel. This is incised over the obstruction and on that side of the intestine opposite the mesenteric attachment and in a longitudinal direction. It will be noticed that there is considerable congestion of the affected piece of intestine, and thus incision causes a fair degree of hæmorrhage. This should be mopped with sterile swabs. The speaker adopts the following method of suturing the bowel. The edges of the cut muscle are first closed with a continuous suture, using No. 0 silk, over which is imposed a layer of Lembert sutures, still using No. 0 silk.

On three occasions I have been fortunate enough successfully to remove foreign bodies from the alimentary canal in this way—two, a plumstone and a pebble from the small intestine, and the other, a teaspoon from the stomach. In each case the operation was performed within four days of the obstruction occurring. A fourth case, which terminated fatally, occurred five days previous to operation. Considerable changes were noticed, associated with the intestinal wall, at the time of operation. The patient, however, did well for five days, food being taken and fæces evacuated. On the sixth day, however, violent vomition occurred and it became obvious that peritonitis had supervened. Death occurred the next day. I am convinced that had the operation been performed earlier it would have been successful.

Stricture of the Intestines.

I have frequently come in contact with cases the symptoms of which greatly resemble those previously described (associated with obstruction due to foreign bodies) which have finally been found to be due to obstruction of the canal by its lumen becoming greatly constricted, due to the presence of cicatricial tissue in its wall. One case, in a Chow puppy, occurred at the pylorus, whilst in several others in dogs of varying ages, the obstruction has been at the ileo-cæcal valve. It is assumed that irritation of the intestinal wall by foreign bodies was the cause. In one case, a middle-aged Terrier, the ileum was distended to the diameter of a hen's egg over an area of a foot long and contained innumerable pieces of grit and stone. The intestine is invariably distended in front of the stricture.

The condition is slow in onset; there is usually a history of indigestion with occasional vomition and constipation over a period of months, and prior to death emaciation is usually marked.

As regards treatment, there is practically none. Theoretically, enterectomy is indicated, with removal of the offending piece of bowel. The speaker has no knowledge of this operation having been performed successfully in the dog. In the case of the Chow puppy, laparotomy was performed and the stomach, which was distended to the size of a coconut by gas, drawn outside. After relieving the tympany by means of a trocar and canula, three incisions, about ½in. long, were made into the musculature of the constricted pylorus. The puppy recovered from the operation, but the condition became aggravated and ten days later it was destroyed. In this case an X-ray photograph was taken, as the presence of a foreign body was suspected, but the result was negative.

Needles.—All practitioners have probably met cases of dogs swallowing needles, and in the event of an abscess forming on the left side of the chest, high up and between the 11th and 12th, or 12th and 13th ribs, know what to search for. A remarkable thing is that if there is cotton or wool attached to the needle it often passes right along the alimentary canal and does not cause much trouble until it becomes arrested by the anal sphincter.

Several other conditions which are very common, but with which there is hardly time to deal fully this afternoon, are intussusception and prolapse, infestation with ascarides and tæniæ, rectal impaction, and with this I might mention chronic induration of the prostate gland. Conditions associated with organs other than the alimentary canal, in which a very constant symptom is vomition, are:—inflammation of the kidneys (both acute and chronic interstitial) neoplasms associated with the liver and intestinal wall, cystitis with vesicle calculus, metritis and peritonitis.

Gastritis and Enteritis from Poisoning.

Finally, I would like to make a few remarks regarding gastritis and enteritis, the result of poisoning.

Irritant poisons, such as arsenic, barium and phosphorus, are common constituents of rat poisons and may be accidentally picked up. They may be given maliciously. (In parenthesis, one might say here that the pet drug of the dog poisoner is strychnine.)

How often we are called to cases in which the owner is already quite certain that the animal has been poisoned by a neighbour. It is very easy to make an obscure diagnosis of "poisoning." In my opinion, cases of poisoning are not common. It is very improbable that small but continuous doses of poison are being given to a dog; and therefore to establish a diagnosis of mineral

poisoning it is essential that the animal was, up to a certain moment, perfectly fit, when suddenly it became violently sick, with acute abdominal pain, and diarrhœa with blood-tinged evacuations may occur. After an hour or so nervous symptoms supervene and, provided the dose has been sufficient, death rapidly takes place.

Provided that the dose has not been sufficient to cause death or that antidotal measures are immediately forthcoming, once the poison is completely eliminated the animal usually quickly recovers. Some little time may be necessary for the healing of inflamed organs to occur, but provided the cause is removed and the animal survives the acute initial injury, recovery is practically assured.

There must, however, be no history of the dog having been off colour for some days, with loss of appetite, etc.; there is no time for bacterial invasion of the mouth to have occurred, and when these are evident symptoms the case is certainly not one of accidental or malicious mineral poisoning.

Poisoning, the result of the over-zealous administration of patent medicines by the owner, is not at all rare, and I have recently come in contact with the case of a Greyhound which died four hours after the administration of a well-known worm remedy which contained male fern, the chief symptoms being those of an acute gastro-enteritis.

One comes, however, to the question of food poisoning. The newspapers constantly record outbreaks of food poisoning in the human subject, and the usual cause is infection by organisms of the paratyphoid type—Gaertner's bacillus, etc. In these cases the disease is set up by bacterial multiplication in the body; it is not an immediate intoxication as is the case of the anærobic *Bacillus botulinus*, which greatly resembles the tetanus bacillus in this respect; and a period of incubation is therefore necessary. It is not at all improbable that many of the obscure cases of gastro-enteritis with which we come in contact are from this cause, especially as the dog is such a scavenger. I do not think, however, that the acute, rapidly fatal cases which I have described with canine typhus come under this heading.

Unfortunately it is another subject upon which very little careful research work has been done.

I have recently encountered, in a kennel, an outbreak of catarrhal gastritis and enteritis which, by a process of elimination, was eventually brought to the biscuit ration, and it was found by enquiry of the makers that the biscuits in question were improperly dried before distribution and had thus become mouldy. Removal of the cause and a little treatment quickly corrected the condition.

The PRESIDENT (Mr. J. C. Coleman): You have heard a most lucid and instructive paper from Mr. Wright, who has covered an enormous amount of ground in very little time, and I am sure you must all be anxious to ask him a number of questions. The paper is now open for discussion.

DISCUSSION.

Mr. C. E. PERRY: I would like to thank Mr. Wright for a paper in which, as the President has said, he has gone very thoroughly into his subject and covered much ground.

I was particularly interested in his statement that pneumo-gastro-enteritis had been put down as a separate disease from distemper, and I quite agree with his contention that it is not a separate entity. These cases are undoubtedly distemper. I have seen a number of them, particularly in Greyhounds. They are not, however, ordinary cases of distemper, but are gastro-enteric in type, and you get that peculiar discoloration of the teeth and ulceration inside the mouth which I think distinguishes the condition from the ordinary distemper cases complicated by gastro-enteritis.

I am pleased to hear Mr. Wright say that he has had very good results with chloretone. It is a wonderful drug in cases of vomition in the dog, whether that vomition is due to specific disease or to ordinary irritation of the stomach.

The essayist mentioned Dimol as a preparation which he had found to be of little value. I cannot agree with him, for I think it is one of the most useful preparations we have in canine practice to-day. In cases of irritation of the bowels, with diarrhœa, I have had some wonderful results from its use.

Another condition mentioned by Mr. Wright in which I am very interested is canine typhus. As a rule you meet with a number of cases at one time, and then they occur sporadically. My experience is that these cases are most difficult to treat, therefore I was very pleased to hear the essayist say that he had success in treating this Stuttgart disease, and I should like him to elaborate his description of the methods of treatment adopted by him. With regard to the occlusion of the œsophagus by bones and other foreign bodies, I have had recently two cases in which (1) a bone and (2) a large piece of gristle have been swallowed and have caused œsophageal obstruction. In both cases I had been called too late and the œsophagus had been ruptured, *post-mortem* examination revealing that the foreign body had broken through into the thoracic cavity. Had these cases been seen in time it is quite possible that something might have been done to relieve the patients.

I would like to ask Mr. Wright for a few further particulars of the operation on the stomach for removing pebbles, etc. It is easy to talk about and to write about, but I should not like to undertake the operation myself.

Mr. W. R. WATSON: Speaking as an ordinary country practitioner, who meets with a few dogs very occasionally, I have found Mr. Wright's paper very interesting and instructive. I am afraid that my practical knowledge could do with a good deal of rubbing up.

Mr. Wright says that bismuth is of great advantage in all stomach disorders, and I give bismuth and soda bicarb., but I find that, combined with that, milk and soda water has a good influence on the stomach. It relieves the dogs of the craving for water that they so often have, and it stays down, when water and milk, and even albumen water, will sometimes be rejected. I have a case now of what I believe is called leptospiral jaundice in the dog, where the craving for water and the vomition are very marked. The dog refuses all food and the breath and the dog's body have a very offensive odour, while he is yellow as guinea gold. With the treatment I have described he is, I am glad to say, making a good recovery. My experience of that type of jaundice was that it was always fatal previously. I am very particular that the dog is rugged up, put in a comfortable basket, kept by the fire night and day, which is another way, than the use of hot water bottles, of keeping the animal's temperature up.

I have not had much success with Dimol; perhaps I do not use it properly—I give it in capsules. I have not used formalin, but I shall certainly give it a trial in cases in which there is profuse diarrhœa. Another drug I have used frequently during the last month or six weeks for the control of that watery diarrhœa which one meets with in cases of epidemic dysentery. In these cases there is no temperature; there is no depression and there are no mouth lesions. He is only very occasionally sick, but there is this very frequent, blood-stained, watery diarrhœa. The dog will usually eat anything you give him, but becomes very emaciated. I lost a puppy of my own through this trouble a little while ago, and he was "game" to the end. The drug to which I have referred was advised by Mr. Aveston,

but it was too late in that case. It is prepared by Wylie's of Coventry, and I think it is called the basic salicylate of alum. In another outbreak of a similar condition in a kennel of Dachshunds it worked almost like a charm. I was called to see these dogs, and found between thirty and forty of all ages, and the puppies were badly affected. They were quite happy, but evidences of diarrhœa were all over the place, and the dogs were skin and bone. The drug worked miracles, in doses of gr v. for puppies, four or five times a day. The alum is astringent and the salicylate is liberated in the bowel. Mr. Aveston called it subsalicylate of alum.

Stuttgart disease and what I call septic gastro-enteritis are, to me, very much the same condition. Very frequently, by questioning the owner, I have been able to trace it back to the animal having eaten some filth. I think that, possibly, if there is a lesion in the mucous membrane, you get an infection, which rapidly becomes a septic gastro-enteritis, and in these cases my sheet anchor is hyposulphate of soda, as an internal antiseptic, either in solution or given in pills. In capsules it has an irritant action on the mucous membrane of the stomach. The essayist mentioned chloretone. I have not used that pure, but I daresay most of us in dog practice know that capsule of chloretone, belladonna and potassium bromide made up by Parke, Davis and Co. I think that is absolutely specific for hysteria, and the convulsive condition you sometimes get in young dogs, due, I think, to a combination of teething and stomach disorder. The treatment can be pushed to an almost unlimited extent. I give small dogs two capsules three times a day, for these teething complications in dogs from 4½ to 6 months old. I have met with the condition very frequently in the finely-bred toy dogs.

I have to thank Mr. Wright for his paper; I have been well repaid for coming to Cardiff. (Applause.)

Mr. A. S. ADAMS: I can only begin where Mr. Watson left off, by saying that I telephoned him last night and asked him if I could come with him to this meeting. He asked me what was the reason, and I told him that I wanted to learn something. I can only say to Mr. Wright that I have learned something and congratulate him on his paper. (Hear, hear.)

I was interested in that bone. What bone does Mr. Wright think it is, and from what animal does it come?

Mr. WRIGHT: I believe that it is the head of a calf's rib.

Mr. E. P. EVANS thanked the essayist for his paper and continued: Mr. Wright has said that some dogs are immune against distemper, but he has not stated how they become immune. I should like to ask why, when he referred to Mr. Elam's cases, the essayist said he assumed that the dogs were immune.

I have been very interested in the injection of Parke, Davis and Co,'s vaccine for the prevention of distemper. I intended to make a strict record of all the cases that I injected, and I asked every owner to let me know whether or not the dog ever had distemper after the injections. In each case (I had a large number) I had no reply, so it was impossible for me to keep my strict record, but I take it that these cases did not have distemper, or I should have heard.

With regard to proprietary worm remedies, I had had the same experience as Mr. Wright. I remember a great, fine Airedale that had been given a dose of a proprietary worm medicine in the morning and later in the day I was called to the dog, which died while I was there. That is not the only case I have had in which dogs have died as the result of the administration of this worm "remedy."

With regard to needles in the stomach, I once had a very interesting case. The owners came to me, saying that they were certain that the dog had swallowed a needle with the thread attached to it. I gave an emetic and the dog vomited—it was a clear vomit, and no needle was present in it. I waited a little longer and the dog vomited a second time; in that vomit I found the needle and thread.

Mr. ADAMS: Mr. Evans has referred to the inoculation of serum for distemper. In 1918 I had the privilege of doing something for the local pack of hounds. I divided the pack into four, keeping one group as a control and utilising the other three for the inoculation of three different sera. It will be of interest to you to know that the control hounds showed the highest percentage of recoveries from distemper. (Laughter.) All the hounds were treated as regards general conditions in the same way.

Mr. H. S. ROBINSON expressed his thanks to the essayist, and proceeded: With most of his lucid paper I am in agreement, but I gather (as I was rather late, for which I apologise), that Mr. Wright contends that this enteritis of puppies from 4—12 months old is distemper. I have had many of these cases and in the past I used to tell the client "it is distemper." Then you forgot about the case and in three months or so the dog would be brought to you again. "Distemper," you say, only to be met with the rejoinder: "It cannot be distemper, he has had it before." I think, therefore, we ought to be very careful with this enteritis, in putting it down to distemper. I think it is something different, although I cannot put an exact name to the complaint. I have used this basic salicylate of alum and I have found it extremely successful; sometimes I combine it with Dimol. It is not irritant, and it certainly checks the diarrhœa.

About these foreign bodies, the difficulty, in my opinion, is that, as a rule, they are not diagnosed sufficiently early to enable one to do any good by operation or anything else. I called Mr. Wright into a case some time ago, in which the dog must have had a neck bone of mutton in the œsophageal end of the stomach for two months. There was a distinct impression in the stomach wall, so long had the obstruction been there, yet neither of us suspected its presence. If we had had an X-ray examination at the start something might have been done, by my trouble in Newport is that X-ray specialists seem to object to photographing dogs. I want to ask anybody in the meeting who has had experience of this same thing, if they have had the same difficulty, and, if they have been able to get X-ray, what is the cost of it and what is the procedure, because I am sure that there are many people who would be willing to go to the expense of X-ray treatment for their dogs.

[A member gave the name of a doctor who charged two guineas, at his surgery, for the application of X-rays.]

I was surprised, continued Mr. Robinson, that Mr. Wright, in his paper, did not say anything about straining in old dogs; that, I think, is very confounding in a number of diseases of the dog. I have never been able to see any reason why an old dog strains, with nothing in the rectum that you can feel. In spite of all efforts to stop him, he goes on straining until hæmorrhage supervenes and the patient dies or is destroyed.

Mr. W.D. REES: I wish to add my thanks to those already expressed to Mr. Wright for his excellent paper, and to say that I hope the other members of the Division will follow his example in the readiness with which he came forward to prepare and read his paper. Such willing assistance is of the greatest help to the officers of the Division. (Hear, hear.)

I want just to make one further observation. I do no dog work, but I noticed in one of the foreign journals this week that normal horse blood is very highly spoken of in the treatment of hæmorrhagic diseases of the alimentary tract in the dog. This reference appeared in *The North American Veterinarian*.

The PRESIDENT: I would like to add my thanks to those of the other speakers to Mr. Wright for the very excellent paper he has given us. It is a very comprehensive paper and of course the subject is so wide in its scope that he has had to touch very lightly upon many matters.

There are just a few things upon which I should like to make a few remarks. In the first place, he says that in distemper nursing is a very important thing. I quite agree with him. Formalin I have found for the purposes he has suggested a most excellent remedy. By the way, have you noticed that "Yadil" has again come to the fore? From its analysis, formalin is the ingredient in it that is of therapeutic value and the proportion of that is so small that it cannot be of any harm or good.

Mr. Wright referred to a number of diseases and amongst them was tæniasis. That was the bugbear of my life 40

XUM

years ago, until I used a compound of kamala and male fern, with which I have had wonderful results. If you use male fern by itself in any quantity it does cause most unpleasant symptoms if you give doses large enough to bring away the tape worm, while sometimes you get no results at all. Does Mr. Wright recommend the purge administration before or after the worm remedy is given ?

Dimol I have not had good results with at all ; I have tried it many times. Salol is the only intestinal antiseptic from which I have had really good results. I have had a large number of cases of canine typhus, or Stuttgart. I treat them with salol and bismuth and wash out the mouth with a fairly strong solution of potassium permanganate, which brings about a very rapid improvement in the ulcerated condition of the mouth. Chloretone has been spoken of a good many times for a variety of purposes. I regard it as specific where a sedative is required, and find it of great value in those cases of fits following distemper. According to the size of the dog, I give 5-15-20 grains and follow with gr. iss. of sodium luminal. I also adopt this treatment for hysteria, and all my cases have recovered up to now.

I was glad to hear Mr. Wright make allusion to intestinal obstruction, for I think many of us are rather nervous of abdominal operations. If you observe asepsis there is nothing more satisfactory than laparatomy and the subsequent deeper surgical operation necessitated by the situation of the foreign body. If you can diagnose the condition, and you can do it in time, I think immediate surgical interference is the only thing.

There has been a lot said about distemper vaccines. I do not know of a vaccine which has yet been put on the market which you can say with any degree of certainty is a specific. I do think that some of them alleviate the disease when it exists, and that is the most that can be said for them. I do wish that we could diagnose distemper with certainty and that we could get out of the way of describing as distemper every ailment of the dog of the nature of which we are doubtful.

With regard to these empiric nostrums, I have had most terrible experiences of these widely-advertised vermifuges ; in fact, not a week passes without my having ten or twelve dogs brought to me suffering from the effects of one or other of these vermifuges which has been given. My experience is that they cause gastritis, enteritis and all the other " itis's."

I have a case at the present moment which I would like Mr. Wright to elucidate if he can. This is a dog that is very well nourished; in fact, in quite fair condition, about two years old, and the only symptoms he presents are that he will not eat anything and has no " go " in him. He was brought to me a week ago and I only gave something non-committal both in regard to diagnosis and treatment. He was brought back to me, and the most I could do was to get the bowels operating. Yesterday the owner informed me that he desired a second opinion. There is no vomition ; there is no infection of the mucous membrane—nothing, in fact, but this persistent dulness. The dog is a Fox terrier.

The Reply.

Mr. Wright : I must first thank you, gentlemen, for the very kind way in which you have received the paper which I read.

Mr. Perry referred to Dimol. It would appear that we have all had varying results from its use. When it was first introduced it was prescribed for human beings in two different tablets, one for gastric, and the other for intestinal, disorders. I used the gastric form extensively, and I found it quite useful. Then the Dimol producers circularised the veterinary profession, introducing Veterinary Dimol, at a price much less than that of the human preparation, and this, I found, did not give the results obtained by the gastric Dimol.

As regards Stuttgart, I am not definitely happy in my own mind that it is a specific disease, and I am inclined to the view that it is simply a conglomeration of symptoms, and that many of the cases of gastritis one meets, if neglected, become Stuttgart, so-called. People will take their dogs out to exercise, and bathe them, when they are suffering from gastric disorders, and these dogs will often develop symptoms indistinguishable from Stuttgart disease. Mr. Perry spoke of intestinal obstruction. The rapidity with which we are able to diagnose the condition is the top and bottom of the question of securing results. With regard to operating, if I make a detailed examination and can find anything there, I generally insist on performing laparotomy.

I always give morphia before administering chloroform. I clip and shave the abdomen, dry and paint with tr. iodi. All my instruments are boiled for 20 minutes before use. I use a basin for my hands, which I first rinse out in boiling water and lysol, allowing the boiling water to cool and then adding 1 per cent. of lysol.

As regards knives, I use a Bard Parker knife, and I discard the blade I use for cutting the skin. With these precautions, I have had very good results.

On Sunday last I performed Cæsarian section on a bitch —there are very few cases of successful Cæsarian section recorded, though any number of metrectomies. I have met with conditions necessitating the operation many times. A bitch is brought to you with the question : " Is she in whelp ? If she is she is a week or so overdue." You feel the abdomen and find one big puppy. You decide to await events, but days go by and nothing happens, until eventually the *os* opens and the size of the puppy (usually dead) is such that it proves fatal to the mother unless metrectomy is performed. This, of course, means sterilisation of the bitch. The particular bitch to which I refer was brought to me on October 7th. I was asked to examine her and was told she was a week overdue if pregnant. On palpation, I found she was in whelp, in my opinion one puppy. I prescribed castor oil and quinine, giving ℥i of the former and gr. iv of the latter, to be given at four hour intervals until gr. xii quinine had been administered. Nothing happened. Three days later I prescribed the same treatment and, in addition, she was given a hot hip bath for half an hour. There was no result. On Sunday, 14th, as the *os* was still closed, it was decided to perform Cæsarian section ; 1¼ gr. morphia was given followed by chloroform and anæsthesia. The abdominal cavity was opened and the pregnant horn withdrawn and incised. The puppy was enormous, and it had been dead about twelve hours, but there was no smell, and as the *os* was still closed I assumed the body was sterile. The whole of the fluid contents of the horn were evacuated (uterine contraction greatly assisted this) and the horn swabbed out with sterile warm water. The muscular layer was closed with a continuous silk suture and over this was inserted a layer of Lembert gut sutures. The operation took place on a Sunday ; on the Monday the bitch was remarkably fit and since then she has never looked back. (Healing has since occurred by first intention.) I would say, therefore, that there is no reason to be afraid to open up dogs, provided one observes asepsis. In the case of the dog with the spoon in the stomach, it was left for three days, as there was no time to do the operation comfortably earlier. An incision was made just behind the posterior sternal cartilage, and the organ drawn from the abdominal cavity and packed round with sterile wool. Suturing was as before, and here again the animal made a complete recovery.

I agree with Mr. Watson as regards soda and milk ; it is an excellent food. He is fortunate in getting recovery from leptospiral jaundice, with which disease, by the way, I have frequently found the rat to be associated. In the commencement of leptospiral jaundice there is no temperature, but marked dulness, and thus one may treat the case lightly, only to find that in about four days the yellow symptoms appear.

I have no remarks to pass on epidemic dysentery, except to say that I agree that many of these cases are not distemper. But in three of my cases in puppies in which flatulence, diarrhœa and vomition were the only symptoms, it was not until the onset of typical nervous fits that one realised that it was distemper one was dealing with.

Mr. Evans asked me why I said, when I was referring to Mr. Elam's cases, that I assumed the dogs were immune. In October last we had an outbreak of typical distemper. The mortality was not high—ten deaths occurred in about eighty dogs. I gave all those eighty dogs credit for being immune against distemper. When, in the spring of this year, we came in contact with the hæmorrhagic type (in which the mortality was 50 per cent.) many of those dogs were exposed to infection and in no case did they develop any visible symptoms at the time of the first outbreak, and one was a puppy only six months old. I attributed that immunity to the fact of the dogs having got over distemper. I think that when a dog is over distemper the immunity is absolute.

I was very instructed by Mr. Hall's remarks on the treatment of flatulence. My sheet anchor has been bismuth and bicarbonate of soda. I agree with him that apomorphine can appear a terrible drug for dogs, owing to the severity of the vomition produced.

I have not had many cases of œsophageal obstruction anterior to the first pair of ribs; most of mine have been either in front of the heart or in front of the diaphragm.

I think Mr. Hall's method of extracting foreign objects from the upper parts of the œsophagus by means of volsellum forceps most ingenious.

As regards X-ray photographs, when they are taken at the hospital here the cheque has to be given to the hospital. I do not recognise the condition of straining in old dogs mentioned by Mr. Robinson other than that due to an indurated condition of the spincter ani or enlarged prostate glands, with rectal impaction. I find, in the former, a suppository of cocaine and belladonna to be the best treatment. A lot of these troubles are due to impacted anal glands.

Mr. Coleman mentioned Yadil. It was the publication of the Yadil formula that gave me the formalin idea. When it was made known that Yadil was only 1 per cent. formalin, I thought I would use formalin, and it was certainly useful in diarrhœa cases.

Concerning the treatment of tapeworms, Ross, of Sydney, recorded his experiments with the administration of arecoline; he used arecoline hydrobromide in water, in doses of $\frac{1}{8}$th to 1 gr. for dogs ranging from 10—40 lbs., and he claimed that he did get 97 per cent. results. He also found that oil of chenopodium was of no use for tapeworm, and I agree with him. In some cases one does get wonderful results with arecoline. If you administer it *per os* it is very nauseating; I dissolve it in water and put it in milk, which the dog, being hungry, readily takes. In the successful cases the worms are passed within a quarter of an hour in one huge evacuation; but you do not always get these results, and I attribute that to the fact that the dog's alimentary canal is not empty. The other bugbear is that 25 per cent. of dogs will vomit it, and so Parke, Davis and Co. have made me up a capsule containing gr. $\frac{1}{4}$ arecoline hydrobromide and gr. iiss chloretone. I now give one or two of these capsules according to the size of the dog, then give him water. There is no vomition.

With regard to the President's case of the dog which is just dull, and shows no other symptoms, all of us have met on *post-mortem* examination many cases of chronic interstitial nephritis, and my experience is, that in many of the cases of foul-mouthed, dull dogs, which are going into a decline, and in connection with which one often falls back on a diagnosis of tuberculosis because one really does not know what is the cause, you will find chronic interstitial nephritis. Possibly the President's case is one of these.

F. H. McDonnell, M.R.C.V.S., has resigned his position as temporary Junior Veterinary Officer, Department of Agriculture, New South Wales, and has gone to the Nyngan and Trangie Districts to study conditions in western New South Wales.

An Introduction to the Study of Poisonous Plants of Kenya.

By R. W. M. Mettam, M.Sc., M.R.C.V.S.

(*Continued from page 967*).

The Urginea have a wide distribution in Central, Southern and Eastern Africa, including Kenya. They are closely related to the Scilla, from which the medicinal agent "squills" is obtained. Both Urginea and Scilla (species of both not determined) have been seen by the writer in the Kikuyu country. The "Squills" of the B.P. is derived from *Urginea maritima*.

Slangkop poisoning occurs in early spring when the veld is very poor and when the succulent green plants prove attractive for cattle and horses looking for food on a veld in low condition.

Tulp and slangkop poisoning occur, therefore, under very similar natural conditions. Occasionally the plants are cut with grass, the feed as hay causing mortality, especially in horses.

The glucoside present in most of the urginea is scillotoxin or scillain, a substance which pharmacologically resembles digitalin.

Botanical Characters of Urginea.

There is a large bulbous root which, in the *U. burkei*, is deep red in colour, but in the Natal slangkop white in colour. The stem appears first and carries the flowering head at its uppermost extremity. The weight of the flower causes the stem to sag, so that the slightly drooping inflorescence swaying in the breeze resembles very strikingly the head of a snake about to attack. The flowers are arranged in a spike and the lowermost are the first to open. They are small and white in colour with spreading petals in *U. burkei* and stellate in form and lilac-coloured in *Urginea macrocentra*. As the flower reaches its maximum development or is dying away the leaves appear. In Natal slangkop there is usually only one leaf. The leaves are strap shaped or cylindrical (*Urginea macrocentra*) smooth, bluish-green in colour, and varying from 6—12 inches in length.

The Urginea grow best near vleis and swamps, but do not actually require the proximity of water. Moisture in abundance is very necessary. All parts of the plants have been proved toxic and harmful effects have followed the ingestion of only 2—3 ounces.

Besides the two plants—*Urginea burkei* and *Urginea macrocentra*—other Urginea have been proved or at least considered toxic. The most recent publication is that on *Urginea macrocentra*, by Mitchell, in 1926.

Symptoms of Slangkop Poisoning.

Natural cases are seen in cattle, but experimentally all stock may be affected. Horses may be poisoned by hay containing the plants, and the same may be said of all stall fed animals. Mitchell has observed that under natural conditions goats did not eat the plants.

The symptoms are those of an acute intestinal irritant but, in addition, there are marked polyuria, muscular tremors, and diarrhœa, often bloody in the later stages. There is nothing remarkable about the temperature, which may fluctuate markedly. There is much grunting, and in Natal slangkop, as emphasised by Mitchell, very considerable tympanites. Clinical examination of the heart is said to reveal serious cardiac disturbances, as manifested by slowing of the heart's action, which is also very weak as judged from the pulse. There is generally complete anorexia, but water is taken in small quantities from time to time.

The course of the disease varies. In Natal slangkop it is fairly prolonged, and may run for 4—14 days (Mitchell), and is preceded by a long coma during which the animal lies down. A noteworthy fact is that in poisoning by Transvaal slangkop symptoms may not appear until after a day or two following ingestion of the plant. Should the animal recover there is a long slow convalescence, during which the polyuria may continue for some time. In

XUM

Mitchell's experiments the stems of *Urginea macrocentra* were found to be more toxic than either leaves or bulbs.

Pathology of Urginea Poisoning.

There is soiling of tail, hindquarters and buttocks by liquid fæcal matter. There is more or less marked gastro-enteritis, and congestion of spleen, liver and kidneys, œdema and congestion of the lungs, and in some cases cardiac hæmorrhages. The intensity of the pathological changes varies naturally with the duration of the illness and the amount of toxic material ingested. In poisoning by *Urginea burkei* the congestion of the kidneys and urinary bladder may be very marked.

Treatment of Urginea Poisoning.

This is not very hopeful. If early cases are detected a rapidly acting purgative, *e.g.*, eserine, may help matters by expelling the irritant plant, but in clinically manifested cases sedatives and palliatives are only of use to allay the severe colic. In Natal slangkop, Mitchell recommends oleaginous purgatives, *e.g.*, linseed or castor oil and demulcents such as well-boiled flour gruel, and white of egg. To relieve the tympany, puncture the rumen and drench with well-diluted carbolic acid.

In slangkop poisoning prevention must be aimed at and can best be performed by completely exterminating the offending plants. This is most easily done in the flowering season (the spring) when the exact position of the plant is seen, and total extirpation can only be assured if the bulbs are dug up.

CROTOLARIA POISONING.

Family: *Leguminosæ*.

Crotolaria constitute a large species of the family leguminosæ, and are very plentiful in the tropics. Some of them are valuable and natural fodder for native cattle and sheep, and are generally regarded by the natives of this Colony as harmless. In fact, they express astonishment when told that many of the plants are fatal for horses and cattle.

The following crotolaria have been definitely proved toxic in South Africa, *viz.*: *Crotolaria dura* by Theiler in 1920, and *Crotolaria burkeana* by the same author in 1911. In U.S.A. *Crotolaria sagittalis*, or "rattle box," is said to cause "crotalism" or "Missouri bottom disease" in those States bordering on the great river. It is not at all generally accepted, however, that *Crotolaria sagittalis* is responsible for this disease, and the whole question requires further research. In South Africa *Crotolaria burkeana* causes the disease "styfsiekte" in cattle, and *Crotolaria dura* "jagsiekte" in equines. Both *Crotolaria burkeana* and *Crotolaria dura* have a wide distribution in Africa, and specimens have already been identified from Tanganyika and the Congo.

Botanical Characters of the Crotolaria.

The Crotolaria are typical papillonaceous plants with a sharply beaked keel. They are mainly tropical and sub-tropical in distribution, and have a swollen, turgid, not flat legume (Stoneman[14]). They comprise a large genus of shrubs with simple or compound leaves, and yellow, rarely purple flowers, in few flowered racemes.

Poisoning by Crotolaria dura. (*Crotolariosis equorum*—Theiler.)

An important feature about *Crotolariosis equorum* is the appearance of a temperative reaction during the period when the plant is being fed. If large quantities are given the reaction is noticed at once, but in the case of smaller quantities the fever may be delayed for some time. This phenomenen will be discussed again. The minimum quantity of *Crotolaria dura* required to produce symptoms was found by Theiler to be 46 lbs., consumed in 23 days, *i.e.*, an average of 2 lbs. per day.

Symptoms include fever while the plant is being fed, but which soon subsides, acute and sudden respiratory distress with respirations fluctuating about 100 per minute, impaired cardiac action, etc., These are followed by loss of condition, listlessness and increased dyspnœa on exertion. Death is said to occur in every natural case showing clinical symptoms and in experimental animals that have eaten sufficient plant.

Poisoning by Crotolaria burkeana.

It was held by many Dutch farmers in South Africa that the disease stiff-sickness or "styfsiekte" in cattle was due to feeding on the *Crotolaria burkeana*. This was experimentally proved by Theiler and Burtt Davy in 1909 as the result of feeding experiments with the plant in the Eastern and Western Transvaal.

Pathologically, stiff-sickness is a chronic laminitis and as a result of disease of the laminae the horny hoof becomes remarkably deformed, thereby causing an altered gait. A similar condition has been seen by Curson* in Tanganyika and by Van Sacoghem in the Belgian Congo. A large number of cattle in Kenya show peculiar deformities of the feet, but whether the cause of the condition is the same as that which causes stiff-sickness in Tanganyika, the Congo and South Africa is not known, but seeing that the responsible plant is widely distributed in sub-tropical and tropical Africa there is logical reason why it does grow in Kenya. At any rate, in enquiring into the cause of hoof deformity in bovines poisoning by *Crotolaria burkeana* must be kept in mind.

The symptoms of stiff-sickness are similar to those of laminitis in the horse. The hoofs are warm, sensitive, on percussion, and placed characteristically with the heels resting on the ground. The hind feet are set under the belly and the fore feet well forward. The horn, especially of the toes, grows long and becomes turned up. If the disease progresses the animal will be soon unable to stand or move, and will lie down and then die of starvation. A change of pasturage works wonders, but recovery is very slow.

There is generally absence of any temperature during the course of the disease. Experimentally about 50 lbs. are required to produce the condition in cattle.

In conclusion, it may be mentioned that all cases of stiff-sickness are not due to *Crotolaria burkeana*. The term is somewhat loosely used by the Boer farmer, and indicates a number of conditions in which there is a stiff, altered, or awkward gait.

Crotolaria sagittalis ([29],[1])

Is said to cause the disease known as "Missouri bottom disease," but there is very great doubt if this plant is wholly responsible, as experimental feeding tests have not proved entirely satisfactory.

The symptoms appear chiefly in horses and are evinced by progressive weakness and loss of condition. The course of the disease is very slow, and often the animal stands with his forehead resting against some object. Sometimes the animal blunders unconsciously through gates, fences, etc. These symptoms are classical of liver disorder and are reminiscent of those described by Theiler in dunziekte[15] and acute liver atrophy and parenchymatous hepatitis.[19]

Animals generally die in a comatose condition. On *post-mortem* there is very marked dilatation of the stomach, which is engorged with food and may weigh 70 lbs. or so. Hæmorrhages into the fourth ventricle and increased density of spleen and liver are also found.

The similarity of the symptoms and pathology of "Missouri bottom disease," and those described by Theiler in dunziekte, etc., are very striking. In dunziekte there is also a very marked dilatation of the stomach which Theiler suggests is due to a paralysis or paresis of the vagus nerve, the motor nerve to the unstriped muscle of the stomach. In Missouri bottom disease the toxin, whatever its nature, appears to act on the nerve endings of the vagus in the stomach wall, and there is thus increased difficulty in discharging the food into the small intestine through the pyloric sphincter.

* *Private communication.*

Summary.

So far, three members of the crotolaria have been implicated as being toxic for stock. Two, *Crotolaria burkeana* and *Crotolaria dura*, have been proved harmful beyond any doubt, but there is a certain suspicion that *Crotolaria sagittalis* requires more experimental proof before it is finally stigmatised as "poisonous." It has been shown in this paper that the toxins of the above-mentioned plants are specific in their selective action on the body tissues. Thus in the case of *Crotolarai burkeana* the toxin acts on the laminæ of the feet, in *Crotolaria dura* on the pulmonary epithelium, and in *Crotolaria sagittalis* on the endings of the vagus nerve in the stomach, liver and spleen.

Senecio Poisoning.

Family: *Compositæ.*

The genus senecio belongs to the compositæ family, and includes many plants of great interest because of the controversy they have aroused. I refer particularly to *Senecio jacobea*, which was said to cause a chronic cirrhosis in such far-flung corners of the earth as Nova Scotia and New Zealand.

In South Africa, the senecio regarded with suspicion are *Senecio burchelli*, *Senecio latifolius* and *Senecio ilicifolius*. These will be discussed more fully below. In Kenya, the senecio genus is a very common and comprehensive one, but the writer has not been able to detect any of the three mentioned above in the Kikuyu country around Nairobi. It is quite likely that they will be found after a more exhaustive survey. According to Pammel, *Senecio aurens*, a common Californian weed, is regarded as poisonous. He gives no symptoms.

Botanical Characters.

All the senecio are typical compositæ. They may be herbs, shrubs, or small trees, and have perfect purple or mustard-coloured flowers arranged in corymbs. According to Stoneman[14] "the genus may be known by the involucre of one row of scales with a few small bracts at the base" below the flowers. The "ragwort" of the British Isles, known to all, is a typical member of this genus. The senecio mentioned by Battiscombe[8] are large varieties which are comparatively unknown.

Three South African species have been proved toxic for man, horses and cattle. Seeds of the *Senecio burchelli* have been fatal for human beings when fed with bread, the seeds having accidently been mixed with flour. Under natural conditions the ragworts are seldom eaten by horses and cattle.

Senecio Poisoning in the Domestic Animals.

The senecio poisoning of cattle in the Pictou Winton disease was supposed by Gilruth and Johnston to be a genuine cirrhosis of the liver, but Theiler[15] has produced evidence to show that in the case of *Senecio latifolius* and *Senecio burchelli* this does not occur in either cattle or horses. The plant toxins act in different ways in the two species of animals. In cattle the gastro-intestinal canal is the chief seat of attack, with secondary lesions in the parenchymatous organs, while in the equine the reverse is the case. Finally, the toxic agent acts more rapidly in bovines than in equines, the latter animals only being affected by large doses of the plant fed over a long period. As with other poisonous plants, as indeed also with most inorganic or organic poisons, there is great individual susceptibility to these plants when fed experimentally.

The different lesions produced in cattle and horses by the same plant may be explained in several ways. There may be two toxins—one acting a short time after ingestion, as in the bovine, and the other acting on the parenchymatous organs a considerable time after the commencement of feeding, as in the equine. Much work has been done on the alkaloids of the senecio, and two have been isolated from *Senecio latifolius*, but it is not known what pathological changes each of the alkaloids can produce if given separately to cattle or horses. Another explanation, of course, is that there is considerable difference in susceptibility of individuals or species to plant poisons just as there are to bacteria.

The whole question of the pharmacological action of toxic plants is little understood and requires further investigation.

Besides the two senecio mentioned above, Phillips[16] mentions *Senecio ilicifolius* in his list of poisonous plants. The seeds of this plant are said to be toxic and similar in their action to *Senecio burchelli*. The enzootic hepatic cirrhosis of horses (walking disease) of the Pacific Northwest, described by Kalken, Tripper and Fuller[30] is apparently not due to any senecio poisoning as the name and symptoms might suggest. The local farmers blame plants for the disease, especially lupines and tarweed (*Malva sativa*), but the cause is still obscure.

Symptoms of Senecio Poisoning in Horses and Cattle.

These are discussed in detail by Theiler, but they may be briefly annotated here for the convenience of those out of touch with libraries.

In cattle there is very marked straining and even eversion of the rectum with profuse, often tarry, offensive diarrhœa, which, in the final stages, may contain blood. The course is generally very short—a matter of a few days. In horses, feeding with senecio results in parenchymatous hepatitis, myocarditis and fatty degeneration of the kidneys. The clinical symptoms are colic, unthriftiness, loss of appetite, jaundiced mucosæ and staggering gait with semi-consciousness. Heart lesions are accompanied by very rapid pulse (120 per minute) becoming weak and small in character and finally imperceptible.

There are also all the classical symptoms of acute heart disease, *e.g.*, marked jugular pulse, presence of abnormal sounds on auscultation, increased cardiac impulse, etc., etc. The disease is described in great detail by Theiler and the reader is referred to his paper for fuller information.

Treatment.

Clinical cases all die, and no treatment can be of any use. Extirpation of all senecio found growing in paddocks or on pasture lands should be vigorously undertaken. Although only *Senecio burchelli*, *Senecio latifolius* and *Senecio ilicifolius* have been proved toxic, it is more than probable that poisonous alkaloids are present in other members of the genus, and it would be advisable to regard all senecio with suspicion and keep them under control, at any rate in camps or paddocks in which valuable horses or cattle are kept. Very little information is available on the prevalence of these plants in Kenya, and the writer would be deeply obliged if field officers would submit to him for identification and experiment specimens of this large and important genus.

Appendix No. 1.

Kenya Plants known to be Poisonous or Harmful.

No. 1. *Abrus Precatorius. Leguminosæ.*

A common climber in tropical Africa, India, S.E. Africa, Australia, etc. It is a woody climber with small scarlet seeds with a black dot at each end. Its pod is 3 cm. long by 1.3 cm. wide. The fruit is commonly called "love bean" or "lucky bean," and is much sought after for ornamental purposes.

The seeds are very poisonous and frequently used in India for nefarious purposes. They contain the well-known toxic substance abrin and, according to Holmes quoted by Stirling,[21] are used by the Indians for the treatment of anthrax and rinderpest.

The seeds are known in Hindustani as "gumchi," and are said to cause in cattle symptoms very similar to those of blackquarter.

Vide articles by Stirling,[21] Phillips,[16] Lander,[1] etc.

No. 2. *Gloriosa Superba. Liliaceæ.*

The superb lily occurs in the south-east coastal belt of Africa, and very commonly in tropical Africa and India. In the latter country the tubers are used commonly for

suicidal purposes. In Kenya this plant is a veritable weed, and appears in cultivated and waste lands during the short and long rains.

It is characterised by very showy brilliant red flowers, and by the apex of each leaf being continued by a tendril by which the plant is held up. The roots, stalks and leaves contain superbine, a very poisonous substance allied to scillain, said to produce fatal symptoms in cattle. According to Bradfield[22] in South-west Africa the natural enemy of this plant is the porcupine, which digs up the roots and eats them.

The writer understands that local experiments made some years ago with this plant failed to cause symptoms.

Vide papers, etc., by Bradfield,[22] Phillips,[16] Lander,[1] etc.

No. 3. *Adenia* (*Species*). *Passifloraceæ*.

Adenia are commonly found in the Kamba country near Nairobi and are known in the native vernacular as "Kalambu" and "Kiliambiti." The former is a woody climber with white flowers, while the latter is a shrub with large plum-like highly-coloured fruits and an enormous root-stock. The Akamba regard the plant as exceedingly poisonous for man and stock, but nothing is known of the symptoms caused by ingestion of the plant. The recent work of Green and Andrews[23] on poisoning by *Adenia digitata* in the Transvaal is a guide for the investigation into the toxicology of adenia poisoning in Kenya.

Experimentally, Green and Andrews produced gastro-enteritis in animals treated with *Adenia digitata*, but the severity of the lesion varied with the dose administered.

To the naked eye, the root-stock of *Adenia digitata* resembles a large turnip, and confusion with edible roots may have led to fatal cases of poisoning on both man and animals.

Vide Phillips,[16] Battiscombe,[8] Green and Andrews,[23] etc.

No. 4. *Datura stramonium*. *Solanaceæ*.

This weed is commonly known as Stinkblaar, Thorn-apple, Jimson's wood (U.S.A.), etc. It is a common African weed and grows on waste lands or neglected shambas. It is an erect annual plant with broad ovate leaves, white or pale blue trumpet-shaped flowers, and large spiny fruits. All parts of the plant, but particularly the seeds, contain the very poisonous alkaloids hyoscine, hyoscyamine and atropine, and are poisonous for man and beast. In South Africa cases of poisoning in man have been observed as a result of eating bread containing the seeds.

Poisoning by this weed has been described in America by King,[24] and the symptoms noticed were those of a narcotic poison, *e.g.*, dilated pupil, staggering gait, difficult respirations, weak pulse, etc., followed by coma and death. On local pastures the weed has always been carefully avoided by stock even when the grazing was very poor. It is generally agreed that this noxious weed has been recently introduced. It is interesting to note that the leaves of this plant are a much esteemed remedy against asthma.

Vide articles by Phillips,[16] King.[24]

No. 5. *Tribulus terrestris*. *Zygophyllaceæ*.

This is a scandent prostrate herb with yellow flowers and large nut-like fruits which are richly armed or spined. Very common on sandy soils in the more arid parts of the country.

Proved by Theiler[25] to cause geeldekkop (yellow thick head) in sheep under certain definite climatic conditions, which have already been noted in this paper. No information is available as to whether this plant has caused disease in sheep in this country, but the plant appears to be not uncommon in the warmer parts of Kenya, *e.g.*, Rift Valley.

Vide article by Theiler.[25]

N.B. In Australia feeding tests with this plant have always proved negative.

No. 6. *Setaria sulcata*. *Graminæ*.

This is a common Central African grass, also sometimes called buffalo grass. Curson was the first to draw attention to the seeds being toxic for small birds. Cases of poisoning in the larger domestic animals have not been proved.

Vide article by Curson.[4]

No. 7. *Matricaria nigellæfolia*. *Compositæ*.

This plant, also called staggerweed, has been incriminated as the cause of "pushing disease" or "bovine staggers" in Natal. The plant grows in marshy or semi-submerged stream-side localities. It has a characteristic odour, and resembles chamomile in appearance.

The stems are usually decumbent and carry deeply divided leaves. The flowers are solitary at the ends of long peduncles and show a yellow central disc with white rays, which fall off the flower at an early stage. Briefly, the symptoms, which are quite specific for bovines, include salivation, staggering gait, violent pushing against fixed objects, grinding of teeth, often knuckling of knees and fore fetlocks, etc. The nervous symptoms are followed by coma and death. Very little is found at autopsy.

Vide various papers by Andrews.[23]

No. 8. *Dichapetalum cymosum*. *Dichapetalaceæ*.

A very poisonous plant called by the Transvaal Boers "gifblaar" or poison leaf. It belongs to a small botanical family which contains several very poisonous plants. It is essentially a tropical and Central African species, and very probably occurs in Kenya. In West Africa arrow poisons are made from members of this family.

The young leaves of this plant have a very evil reputation for poisoning stock, especially in the spring and autumn. The symptoms, which are said to resemble heartwater, are mainly nervous, and are followed by sudden death.

The plant is low-spreading, with entire leaves and deep roots. There is no visible stem, and the leaves are lance-shaped. The flowers are short, pedunculated and pale yellow. The fruit is a hard drupe, somewhat like a crab apple in appearance. According to Lander[1] Dumphy poisoned sheep with 1½—2 ounces of the leaves. The active toxic principle in the leaves is said by Lander[1] to be a cyogenetic glucoside.

This plant, though not very prevalent in South Africa, causes very serious losses every year by poisoning cattle and sheep.

No. 9. *Vangueria Pygmæa*. *Rubiaceæ*.

Ingestion of this plant causes the disease known as gonsiekte (quick-sickness) in South Africa. Sheep are the animals affected, and in some cases certain farmers have suffered very heavy mortalities.

The disease receives its Dutch name from the alarming manner in which sheep drop dead or die suddenly. Theiler, du Toit and Mitchell[26] have thoroughly investigated the disease, and have shown that the plant toxin has a specific action on the heart musculature, causing a productive myocarditis and thereby dilatation, so that animals die suddenly if chased and whenever extra strain is thrown on the ventricles. There are also degenerative changes in kidneys and liver.

Gonsiekte is a non-febrile disease and may occur long after sheep have been removed from toxic pastures (an average of 37 days).

The toxicity of the plant varies considerably from season to season, and it is even believed that plants grown on red soil are much more toxic than plants grown on black soil.

There is no record of *Vangueria pygmæa* occurring in Kenya, but trees of this species, *e.g.*, *V. edulis* and *V. infaustra*, are common in the Kikuyu country and throughout the tropics generally. Both these trees are regarded by the Kikuyu as innocuous, and the fruit of the former is edible and used to give a taste to a certain fermented beverage.

Vangueria pygmæa at first bears a close resemblance to *Dithapetalum cymosum*. It is a low green prostrate acaulescent herb with white scanty flowers, and a large drupe-like fruit.

Plants answering to the description of *V. pygmæa* or *D. cymosum* should be regarded with suspicion, and sample forwarded for immediate identification.

No. 10. *Cassia (species ?). Leguminosæ.*

It is believed in Australia, South Africa, etc., that *Cassis obovata* is poisonous for stock. There is a very common cassia in this country which grows wild. Battiscombe has identified it as *C. didymobotrya*, but it is known locally as "wild senna," and to the Masai as "ol-senetoi."

This particular plant, which bears a very close resemblance to the *C. obovata* of South Africa, *has not been* proved poisonous for stock. A few feeding experiments with the leaves and flowers failed to have an action on rabbits beyond being a slight laxative. The Masai drink an infusion of the leaves and recognise it as a very useful drug in the treatment of constipation. The purgative value of this plant deserves further research.

According to the Kikuyu, the plant, although not eaten even by goats, is non-poisonous.

C. didmobotrya is a small tree up to 20 feet with compound primate leaves rounded at the apex. The flowers are very conspicuous in dense yellow racemes, and have a peculiar objectionable odour. The flowers are succeeded by characteristic legumes which turn black when they are ripe.

Although local opinion is that this tree is harmless it ought to be regarded with suspicion on account of its similarity to *C. obovata* of South Africa and Australia which is claimed to be poisonous.

Vide Phillips.[16]

Notes.

The list of known poisonous plants in this appendix is obviously very incomplete. A few well-known plants considered by competent authorities as being likely to exist in this country have been described in the hope that some light may eventually be thrown on the subject of poisonous plants in this colony by various field veterinary officers, who may feel certain that in outbreaks of unknown diseases a plant may be culpable.

Many valuable observations on poisonous plants have been made from time to time by officers in the field, who are in a position to discuss facts with farmers (if they are at all observant) and particularly with natives, many of whom possess a really sound knowledge of the local flora.

Appendix No. 2.

(*a*) Kenya Plants which are Non-poisonous but capable of causing more or less serious Local Lesions.

(*b*) Notes on Plants used by the Natives for Treatment of Human and Animal Diseases in Kenya.

No. 1. *Dichrocephala chrisanthemifolia. Compositæ.*

This is a very common annual herb which grows chiefly in damp places. It has very small flowers divided into small round heads. According to Battiscombe,[8] this plant was reported by Montgomery in 1915 to possess properties similar to ergot. At the time of writing I have been unable to trace any records of experiments done at Kabete with this plant. Presumably, because it possesses properties similar to ergot, this plant is responsible either for causing pregnant animals to abort, which ergotised grasses are supposed to do, or else causes a chronic disease characterised by gastro-intestinal disturbances and dry gangrene of the extremities. In absence of experimental proof that this plant is harmful to animals, it is impossible to do more than regard the plant with suspicion and carry out feeding tests as soon as possible.

The Kikuyu name for this herb is Kamugwala ng'ondu.

See Battiscombe.[8]

No. 2. *Cyathula polycephala. Amarantaceæ.*

This is a scandent herb with reddish stems and a very common weed in the Kikuyu country, in places where shifting cultivation has been practised and lands have been allowed to get out of control.

The white flowers are very characteristic and troublesome in that they adhere to clothes, the long hair of dogs and the coats of the various domestic animals. Moreover, they are sharp and spiney, and cause a local irritation of the buccal mucosa and lips. They worry horses and cattle if they adhere to the hair of the face, around the eyes and nostril and mouth.

The plant is not poisonous, as the leaves, which are hairy, are readily eaten by goats, but like other members belonging to this family, *e.g.*, various species of Achyranthes, Alternanthera, Amarantus, Aerva, etc., which grow in profusion in the highlands of Kenya, it is a troublesome plant and worrying to stock.

The Kikuyu name for the plant is Kiramata.

No. 3. *Plumbago zeylanica. Plumbaginaceæ.*

This is a common bush in the Wakamba country, and is known in the vernacular as "wala." It has white flowers, and the leaves are in great demand in the treatment of sores. The juice is very astringent; in fact, it is distinctly vesicant. It is a popular local remedy in the treatment of various cattle ailments, and is applied locally over the seat of disease. Little opportunity has been given of trying the action of this plant on a large scale. It is regarded by the Wakamba and Masai as a specific in the treatment of East Coast fever, in which disease the juice of the leaves is rubbed over the swollen lymphatic glands.

No. 4. *Periploca linearifolia. Asclepiadaceæ.*

This is a very common climber in the country around Nairobi, and has a wiry stem, linear-shaped leaves, and a large rootstock. The abundant juice of the rootstocks is used by the Akamba as a galactogogue with apparent success, but very little is really known about the plant, which belongs to the poisonous milk weed family. Our knowledge of the so-called galactogogues in veterinary therapeutics is enough to permit one to have suspicions that native remedies for the stimualtion of the milk secretion are not likely to be of very great use, yet there are good reports about this plant which might repay careful investigation.

This plant is known to the Akamba as "molali."

No. 5. *Cissus erythrochlora. Vitaceæ.*

This plant belongs to the same family as the grape vine, and bears a close resemblance to it, though the fruit is much smaller and red in colour.

The young stems have an abundant sap which is much used by the Akamba as an "eye" medicine. Native eye medicines are nothing more than astringents, and are generally used to cause lacrimation.

In cissus the sap is sharp and astringent, and is used in all diseases of the eye. Good success is claimed by the medicine men, but the medicine apparently has only a local action on the conjunctiva and exterior of the eyeball. Only further research will decide on the efficacy of this plant.

No. 6. *Pterolobium lacerans. Leguminosæ.*

This is a fairly common climber, which is covered with curved prickles, while the stem is covered with warty excrescences. The flowers are in panicles, cream coloured, and followed by a brilliant red one-winged fruit.

A decoction of the root is used by the Nandi and Masai as a purgative, and has the reputation of being very effective, but distinctly griping in its action, and for this reason is not so popular as the cassia infusion already mentioned.

The plant is known to the Nandi as "kaskiset," and is quite unknown to European therapeutics.

No. 7. *Myrsine africana. Myrainaceæ.*

The dried fruits of this bush (migaita-Kiluyu) are a popular remedy in the treatment of intestinal worms.

The bush is densely covered with small leaves, while small purple flowers are produced in dense clusters at the axils of the leaves and succeeded by purple fruits which

turn brown when ripe. These ripe fruits are seed-like in appearance, and resemble peppercorns in size and shape. They are practically tasteless.

The Kikuyu simply eats about fifty of the seeds, retires, and lies hidden. Their action is said to be very efficacious in expelling tapeworm.

Experiments with these fruits are being conducted on sheep parasites by Mr. Daubney.

No. 8. *Ricinus communis. Euphorbiaceæ.*

This is the common castor oil tree, which is such a typical feature of this country. The leaves of the tree are eaten by goats without ill effect, and the Kikuyu make a purgative from the seeds. The cultivation of this tree in order to make use of the oil for commercial purposes is causing increasing attention in the Colony.

Conclusions.

The list of plants in this Appendix is obviously very incomplete, but the plants that have received notice are of considerable interest, and may prove on further experiment to be of real benefit.

Should any interesting plant be brought to the notice of the Field Staff with a history having some medicinal value, the writer would be greatly indebted if he is given a chance of examining the specimen. Due acknowledgement will be given in every case for material received for identification and trial.

General Remarks and Conclusions.

The number of plants mentioned in this paper as being poisonous is infinitesimal, and gives a totally inadequate idea of the true number of poisonous plants, but it is hoped that the paper will stimulate the interest of the Field Veterinary Staff in the study of this very important branch of comparative pathology.

It is wished, before concluding this paper, to emphasise one or two important points which have come to light during experimental work. These points have not yet been satisfactorily explained, but they have considerable interest and importance.

In his work on jagsiekte[15] in horses and on geeldikkop in sheep,[25] Theiler observed the two very striking features that (*a*) a plant may cause a typical febrile reaction simulating an infectious disease, and (*b*) that a disease caused by a plant may have a long period of incubation or "latent period" before symptoms appear. In his feeding experiments on *Senecio latifolius*, Theiler observed that death occurred from poisoning a considerable period, in one case 96 days, after feeding had been discontinued. As mentioned in this paper, the tulps, the slangkops and acokanthera are acute and rapid poisons, poisoning their victims in any period from six hours to as many days, whereas the chronic poisons, such as occur in *crotolariosis equorum*, etc., may take several months.

No satisfactory explanation has been advanced to throw light on these divergent phenomena, some of which are typical of diseases caused by micro-organisms. At one time it was thought possible that an organism saphrophytic on a plant may be the responsible agent, but autoclaving, which would certainly have sterilised any known bacteria, failed to destroy the plant toxin. Similarly, the febrile reaction in jagsiekte of horses and the long incubation period in senecio poisoning have not been explained. Apparently the potency of the plant toxin is an important factor to be considered. Some are acute irritants, and act rapidly, as in tulp, while others are mild in the sense that they do not exert any rapidly fatal action on the glands and tissues of the body, but are possibly sometimes cumulative in action, and possess a predilection for some particular organ or tissue, thus producing pathological changes at first mild, but becoming increasingly grave and causing irreparable damage as the lesion gets older, *e.g.*, the chronic lung lesions in jagsiekte or liver lesions in senecio poisoning.

In Theiler's own words, "investigations carried out with toxic plants as causes of diseases have so far brought two facts to light, *viz.*: (1) in the case of *Senecio latifolius* feeding, that a disease caused by a plant poison may have a long incubative period or at least a latent period, before symptoms occur, and (2) in the case of *Tribulus terrestris*, that a plant may produce a typical fever resembling in every respect that of an infectious disease. In *Crotolaria dura* we have both an incubative period and a fever reaction." Theiler suggests that "in *Crotolaria dura* more than one toxic principle is present, one that acts immediately, but is not fatal, and another one that acts after an incubative period." Theiler finally concludes that "accurate data will, probably, become obtainable once the separation of the toxic principle has become possible, and experiments with it can be undertaken." Only further research will find the real explanations of these interesting phenomena.

The selective action of the toxin of *Crotolaria dura* for the equine lung or the bovine liver and of the toxin of *C. burkeana* for the laminæ of the hoofs show that plant poisons like bacteria or bacterial toxins may act specifically on certain organs and tissues. The common idea is that a toxic plant poisons either very rapidly or more slowly, but it is not so commonly known that plant toxins may only produce their effects after a certain incubative period, or a typical febrile reaction, and lead to definite and specific pathological changes in various organs and tissues of the body. In investigating a new disease, therefore, in which the cause is not obvious, it is necessary to consider the probability of a plant toxin being responsible, even though most of the symptoms are typical of an infectious disease.

By many people the determination of poisonous plants is regarded as belonging to the domain of the skilled botanist. Nothing is further from the truth, for a veterinarian with a penchant for botanical study, even as a hobby, is likely to do much useful work without any outside assistance, as shown by the excellent work done in the early days in South Africa by such men as Dixon, Chase, Roberton, Henning, Hutcheon, Theiler and many others.

Presentation to Mr. Charles Roberts.

"A pleasing ceremony took place yesterday (Thursday) when Mr. Chas. Roberts, M.R.C.V.S., the well-known Veterinary Surgeon, of Tunbridge Wells, was presented with a six-cylinder Austin saloon car," says *The Kent and Sussex Courier*, of 9th November.

"Mr. Herbert Buzzard, in making the presentation, said that it was felt by a number of farmers and stockbreeders of the Counties of Kent and Sussex that some practical form of esteem and appreciation should be shown to Mr. Chas. Roberts for the many services he had so courteously rendered them for so many years. It was, therefore, an honour and pleasure to him that he had been asked to make the presentation on behalf of the company assembled. His one regret was that it was not possible to have all the donors with them that afternoon.

"Mr. Chas. Roberts, in reply, said he did not know how to express his feelings; he was overwhelmed at receiving from them such a handsome gift. It filled him with pride to know that his services were so greatly appreciated by the stockbreeders and stockowners as to cause them to think of making him so serviceable and costly a present.

"This country was to a great extent, much more than was generally realised, dependent upon its agriculture; agriculture depended largely upon the health of the animals reared on the land, and the health of the animals depended in no small degree—he thought he might say without presumption—upon the care and skill of the veterinary surgeon. For his part, the main interests of his life were and always had been closely linked with those of agriculture in the branch known as animal husbandry, and it always gave him great satisfaction to do all he could in furtherance of their interests. That they, in turn, had valued what he had done was shown in the gift he had received that afternoon.

"That he occupied so high a place in their estimation afforded him intense gratification, and he thanked the gentlemen present, and also the donors who were not present, most cordially and sincerely for their generous gift."

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[15]	Dunziekte in Horses (Enzootic liver cirrhosis)	A. Theiler	7th & 8th Report of D.V.R. Union of S.A. 1920.
[16]	A Preliminary List of the known Poisonous Plants found in South Africa	E. E. Phillips	Botanical Survey of S.A. Mem. No. 9. 1926.
[17]	Veterinary Pathology...	A. T. Kingsley	Chicago. 1917.
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[19]	Acute Liver Atrophy and Parenchymatous Hepatitis in Horses	A. Theiler	5th & 6th Report of D.V.R. Union of S.A. 1919.
[20]	*Urginea macrocentra*: Its toxic effect on Ruminants ...	D. T. Mitchell	11th & 12th Report of D.V.R. Union of S.A. 1926.
[21]	Poisoning by Gumchi or Suis	R. F. Stirling	*Vet. Journal.* Vol. 80. 1924.
[22]	Three Poisonous Plants and their natural enemies in S.W. Africa	Bradfield	*S. A. Farmers' Weekly*, 3/8/27.
[23]	The Toxicity of *Adenia digitata*	H. H. Green & W. H. Andrews	9th & 10th Report of D.V.R. Union of S.A. 1923.
[24]	Jimson Weed Poisoning	E. D. King	*J. A. V.M. A.* Oct., 1923.
[25]	Geeldikkop in Sheep (*Ovium tubulus*)	A. Theiler	7th & 8th Report of D.V.R. Union of S.A. 1920.
[26]	Gonsiekte in Sheep (*Vangueriosis ovium*)...	A. Theiler & P. J. du Toit, D. T. Mitchell	9th & 10th Report of D.V.E. & R. South Africa, 1923.
[27]	Poisonous Plants	L. H. Pammel	Ditto
[28]	So-called Staggers in Horses caused by the Ingestion of *Pteris aquilina* (the common bracken)	S. Hadwen	*J. A. V.M. A.*, Feb., 1917.
[29]	Bottom Disease amongst Horses of South Dakota ...	Schroeder	8th & 9th Ann. Report B.A.L. U.S. Dept. Agric. 1891-92, p. 371.
[30]	Enzootic Hepatic Cirrhosis (Walking Disease) in the Northwest	J. W. Kalken, H. A. Tripper & J. R. Fuller	*J. A. V.M. A.*, Dec., 1925.

The Veterinary Record

17th November, 1928.

ROADS AND SAFETY FIRST.

Prior to 1922 little attempt was made to gather data regarding the nature, density and weight of traffic on our main roads, nor had highway administration been faced with any serious problems of road construction, surfacing and annual maintenance. The great development of motor traction of recent years, however, has made it quite clear that any sound and economical system of administration must be based on accurate knowledge of the volume of traffic using roads, and, what is more important still, of the inferences to be drawn from careful comparison between gross tonnage passing over roads varying in construction and surfacing on the one hand, and the initial cost, life and annual maintenance charge for each type of surface on the other. For this reason the Ministry of Transport instituted in August, 1922, a traffic census on Class I roads in Great Britain, the count being taken on seven consecutive days from 6 a.m. to 10 p.m., at 3,808 points. In 1925 a similar count was taken at 4,603 points on approximately 24,000 miles of Class I roads, and as the value of such statistical enquiry lies in deciding points connected with classification of different roads, estimating future traffic needs, and improving road surfaces, a triennial census was deemed necessary. The report of 1928 is not yet to hand, but the 1925 report showed a considerable general increase in the volume of traffic over the census and report of 1922, and a striking feature in comparison between the two years was the rapid transformation of road surfaces in the direction of durability and permanence. It is conceivable that 1928 will show even greater improvement over 1925. But durability and permanence, which no doubt are the chief aims of the road engineers and the highway administrators, are not in themselves sufficient. Road surfaces must be made safe alike for the fast moving motor vehicles and for animal traffic. Slippery roads are dangerous for all forms of traffic and transport, and in country districts where horses continue to be a prime factor in agriculture, ordinary trade and pleasure, it is only right that in their own areas the wishes of owners of animals should be respected and that roads which they necessarily must use should be rendered safe for their animals to traverse. In this connection, we include cattle, as frequent accidents occur to them while being driven on the roads to and from markets.

In our issue of last week we published extracts from the report of investigations by a Committee specially appointed by the National Horse Association of Great Britain, whose terms of reference were to inspect and carry out experiments as to the non-slippery nature of certain constructed roads and road surfaces recommended to them. In the same issue a letter was published from the Secretary of the Institute of the Horse, who approached the subject of slippery roads from a different angle, *viz.*, from the point of view of making horses safe for the roads by special shoeing, instead of rendering roads safe for horses. Both have their merits, and both are worthy of encouragement until the ideal is reached. It would seem quite within the bounds of human intelligence to construct first- and second-class roads of such a nature that liability to skidding of motor vehicles would be reduced, and at the same time road surfaces could be made to afford a reasonably satisfactory foothold for the common use of animals. At all events, the Slippery Roads Committee of the National Horse Association are to be congratulated on the start they have made. The valuable report they have submitted cannot fail to be a great assistance to the Ministry of Transport and to District Highway Authorities, and it is hoped that the Committee will continue to watch the situation and report further investigations in due course. With an annual expenditure of approximately £800 per mile for the maintenance of first-class roads, taxpayers expect efficiency in construction and in which safety is implied.

Of making horses fit for present-day roads by a process of shoeing, we have not heard the last word. Non-slipping shoes, in common with all other kinds of horse shoes, have always carried the interest of members of the veterinary profession, and appealed to their ingenuity. Many devices from time to time have been brought to public notice, most of them with india-rubber pad arrangements, very useful and generally well reported on. One pattern of patent pad enjoys a particularly good reputation. And we may say, in conclusion, that a member of the profession has taken out a patent for a non-slip shoe without pad attachment, a description of which, together with the results of trial, it is hoped will be made public in the near future.

Veterinary Inspection Facilities at Free State Ports.

Mr. F. Mayrick, Secretary of the Department of Lands and Agriculture, giving evidence before the Ports and Harbours' Tribunal Board on October 30th, said that while the construction, equipment and accommodation of the majority of the veterinary inspectors' yards were fairly satisfactory, it would make for greater efficiency and more economical working if the place of veterinary inspection at the large ports was centralised in one yard, with a central lairage of ample capacity situated at a convenient distance, where animals could be fed and rested while awaiting inspection and shipment.

He went on to state that the veterinary inspection yards at Dublin, Dundalk, Drogheda, Wexford, Galway and Ballina were sufficient for the present needs, and in most cases their equipment was fairly satisfactory. The accommodation at Waterford, Cork, Limerick, and Sligo was not at all times sufficient.

CLINICAL AND CASE REPORTS.

Hysteria (So-called) in Dogs.

By J. W. Hall Masheter, M.R.C.V.S., Newnham-on-Severn.

Hysteria is said to occur in animals. This was first asserted by Higier (1898).

The cases of alleged hysteria in dogs reported by Mainzer (1906) have been criticised by Dexler, and the latter has shown that hysteria in animals occurs, at most seldom, or not at all, because it is prevented by the specifically animal mentality, by the inability to co-ordinate the relations of phenomena one to the other.

Hysteria (*Votepa*, the womb). Hysteria is a condition or set of conditions which it is difficult to define, because it is not known what changes in the nervous system lie at its root.

Hysteria manifests itself by overaction of some parts of the nervous system, or by failure of other parts to perform their natural work.

In consequence, there follow mental changes, convulsive seizures, spasms and contraction of limbs, paralysis, loss of sensation over areas of the body, affections of various internal organs, derangement of joints, and combinations of these which closely mimic various organic diseases.

Now, that is in regard to hysteria in the human patient and is confined solely to the female sex, whereas the so-called hysteria in dogs affects both male and female.

In my own practice all the cases have been confined to the male species.

Having, therefore, seen that the symptoms of the so-called hysteria in dogs are absolutely at variance with accepted medical opinion, can we turn to any condition of the nervous system which can account for these evanescent symptoms seen in our patients? I think we can—that is, I think we may call this so-called hysteria a psychosis, or a mental disease.

Under psychoses, in a restricted meaning of the term, are included affections of the cerebral cortex, which are more or less chronic and diffuse, organic or functional in their nature, and occur exclusively or mainly in association with abnormal manifestations of the psyche. *They form, therefore, a separate form of disease.*

All well characterised brain diseases must be *excluded* from the class of psychoses proper, otherwise most brain diseases would have to be classed with psychoses, because the cortex, the organ of psychic phenomena, is involved, and because diffuse or isolated disturbances of the psychic processes make their appearance.

The occurrence of psychoses in domestic animals cannot be denied outright. It cannot be gainsaid that the higher animals possess certain psychic functions, and therefore the possibility must be admitted that these functions suffer disturbances in certain brain diseases, or especially in those diffuse cerebral affections which are essentially alike in man and in animals, or are at least anatomically similar, and in which, in man, psychic disturbances are known to dominate the clinical picture.

Great differences, however, exist between the highly developed psyche of man and the animal psyche, in so far as the psychic expressions of animals are regulated, more particularly, by their actual sensations, and the few or simple mental pictures or concrete ideas which are associated with sensations, as well as the ability to use judgment, are of far less importance.

It is possible, therefore, in animals, that simple sensations or even inherited and acquired automatic actions may give rise to an apparently reasoning reactive movement, without the co-operation of actual psychic processes, simply by the activation of corresponding nerve impulses upon the numerous inherited motor mechanisms.

The psychic functioning of animals is extremely *simple and shallow*, working, one might say, with the elementary factors of human psyche, and only *rudiments* of these psychical disturbances may be expected in animals, which are varied and diversified in man.

True psychoses are probably of infrequent occurrence in animals.

The slight manifestation of psychical functioning in the vital phenomena of animals provides a certain protection against a harmful degree of participation on the part of the related nervous portions of the cerebral cortex.

The nervous system of animals is not nearly so much exposed to injurious influences as is that of man.

It follows, from these considerations, that the interpretation of the apparently psychic disturbances must be undertaken with great care in every case, guidance being obtained from human psychopathology and from comparative psychology.

Having made these full gleanings from the material at hand, I am brought to what I wish to convey, *viz.*, that the disease is not hysteria, but is a mental disease or psychosis, and it would appear that it can be classified under the heading of "Anxiety Psychosis."

Anxiety Psychosis. Dexler says that under this category would also belong the mad rush of a herd of animals (taking fright in a body, a stampede, animal panic), but there is no valid reason for considering these as acute psychoses, because in such stampedes it is less an unthinking factor, the sensing of danger, and the transmission of this idea upon all individuals of a herd that is here active, but rather, *reactions to external influences based upon instinct.*

The impetus of a stampede is apparently always afforded by the abnormal excitement of *one* or several individuals and finally it causes an unreasoning flight.

A blind, unreasoning flight is now and again noticed in single animals.

These last two paragraphs bring me finally to a description of the so-called hysteria in dogs as I have experienced it, and, bearing in mind all I have quoted *re* hysteria and psychosis, I think I have made out some sort of case that the disease in dogs is a psychosis and not hysteria.

It is a more or less evanescent disease of the cerebral cortex.

Of the many cases I have had recently I think two typical cases will be sufficient to enable me, if not to prove outright that it is a psychosis, at least to put a somewhat different view from that generally held, which perhaps may incline more able men to take up this question, for there is no doubt that the name hysteria, as applied to this phenomenon, is a misnomer.

I will describe a single occurrence, and a multiple one, bearing in mind that these four animals were of the *male* sex.

Case 1. Alsatian dog. Symptoms: Restlessness, anxiety, a sort of listening attitude with eyes fixed and looking ahead, ears pricked. Took very little notice of owner when spoken to, except that for an instant the ears would go back quickly and a quick glance be given; an occasional whine—an anxious whine, as if wishing to get away.

These symptoms persisted for a couple of days and culminated in a breakaway.

The dog, which was upstairs with its mistress, suddenly made a dive for a closed window, crashed through it, landed in the yard and galloped full stretch across country, taking everything in its stride—gutters, fences, etc.—and so to the River Severn, which was at full flood tide. It dived into the water and swam to the other side (something like a mile) where it was lost sight of.

He returned the next day, having again crossed the river, much more sensible, but still showing anxious symptoms.

Treatment. 10 grains chloretone, three times a day, light food, and to be kept indoors in a quiet room.

He gradually quietened down and has had no recurrence. He is a beautiful-tempered dog, and at no time did he develop any viscious propensities.

Case 2. To illustrate the multiple side of this phenomenon, three police Airedales, kept in kennels with a large run enclosed by 6ft. wire netting on stout posts.

All three showed the preliminary symptoms as described in the foregoing case; finally, one young dog charged the netting and broke through, followed by the other two—a three-parts-grown puppy and an old dog.

Nothing more was seen of any of the dogs that afternoon or evening, but all three returned next morning in a very exhausted state.

The treatment was the same as for the Alsatian, with the same result.

The disease or condition lasts for 3 or 4 days, and although I treated these, it is my opinion that there would have been a spontaneous return to normal.

In my long and rather varied career, I have experienced three stampedes—all in army horses—and in each case practically the whole of the horses of a regiment stampeded, and from no known cause.

Two of these occurred in the South African War, 1899-1902, and one during the last war.

On looking back over the years, I think I have experienced two cases of *true hysteria*. These were both in *mares*, when taking the regiment from the Curragh to Cape Town, and occurred as we were passing through the "Doldrums" (I believe that is the term used for that hot, steamy, breathless part of the ocean somewhere about the Equator).

The symptoms were those of great excitement, amounting almost to mania—kicking, squealing, biting, tail going like a windmill, with "squirty" emission of urine—culminating in complete exhaustion and coma, which latter only lasted for a short time, after which the mares got up and appeared as if nothing at all had happened to them.

References.—Black's Medical Dictionary.
Hutyra and Marek, Vol. III, 3rd edition.

Treatment of Punctured Wounds of the Muscular Structures.*

By Lt.-Col. R. C. Musser.

The following suggestions are offered for their proven practical value, rather than with the idea of presenting anything new or radical in the way of wound treatment.

The not infrequent occurrence of punctured wounds of the heavily-muscled regions of the horse, at times presents troublesome clinical problems, especially the old surgical requirement of providing suitable drainage.

It was during the consideration of a case in which good drainage was indicated, and for which there seemed no practical solution, that the writer experimented with a line of treatment that, to him, was both unheard of and unorthodox. This case was that of a cavalry horse which had been injured in the lumbar region by an improperly adjusted cantle roll, while the regiment was in the field engaged in annual manœuvres. The original injury consisted of an abrasion and contusion of the tissues surrounding the tip of a spinous process, with subsequent infection and the formation of a moderate-sized abscess, which, under routine treatment, made an uneventful healing and the animal was restored to duty. Shortly after returning to the home station there was a recurrence of the abscess, with a profuse discharge, and it was discovered that a vertical cavity of moderate diameter extended down one side of a spinous process to a depth of about five inches.

The problem of attempting surgically to provide suitable drainage in this region was not an inviting one, and prior experience in treating infected cavities, improperly drained, by use of antiseptics in aqueous solution, had proven very unsatisfactory, so the following procedure was adopted.

The external wound was thoroughly cleansed, the opening suitably enlarged, the cavity explored for sequester, or other foreign body, flushed out with a half strength hydrogen peroxide solution, and then filled with five per cent. carbolised olive oil. The subsequent treatment consisted of thorough daily cleansing of the external wound and flushing of the cavity with the carbolised oil injected as deeply as possible with a dose syringe. After removal of the pus and débris, the cavity was filled with oil and not disturbed further until the following day. This case made a satisfactory recovery, and during the year in which this animal was subsequently under observation, there was no recurrence of the abscess condition.

Another case illustrating the apparent value of this line of treatment was that of a cavalry horse with an automatic pistol bullet wound, incurred while the troop was engaged in target practice. The animal was brought to the clinic shortly after the accident, and showed no particular discomfort. The bullet had entered the top of the neck at the collar seat, and apparently ranged downward and forward on the left side of the vertebræ. There was no apparent exit, and no effort was made to locate the bullet. The hair was removed from the wound area, the external wound cleansed and painted with iodine, and the cavity carefully filled with five per cent. carbolised oil. This line of treatment was continued daily and the recovery was

* Reproduced from Vol. XXI., No. 6, of the U.S. Army Veterinary Corps *Bulletin*.

rapid, uneventful and complete, at least so far as six months' subsequent observation could determine.

This line of treatment has often proved satisfactory in the case of punctured wounds of the muscles of the extremities, where the tendency is for the wound secretion and infection to gravitate downward between the muscles, even where good drainage has apparently been provided. This is particularly true in cases where any considerable amount of bruising of the tissues has occurred.

While injuries of this type sometimes undergo a normal and satisfactory healing, it frequently happens that, following a partial subsidence of the primary swelling, a marked secondary swelling will appear suddenly, and examination will reveal an extension of the cavity downward, requiring further surgical interference. This is particularly the case where antiseptics in aqueous solution have been used, as any of the solution retained within the wound seems to act as an irritant and tends to aggravate the condition.

Apparently the tissues have a decided tolerance for carbolised oil, whether there be proper drainage or not, and the writer has never noted undesirable results following the use of this line of treatment in wounds of the muscular structures. It should be understood, of course, that every effort should be made to provide suitable drainage, whenever possible, and to remove any foreign material which may be present.

While the author has always used either olive or cotton-seed oil in making up this preparation, it is believed that any other bland oil would prove suitable. This agent has the additional virtue of being somewhat of a fly repellent.

ABSTRACTS.

[Experimental Studies on Avian Diphtheria, N. NAKAMURA, (In *Report of World's Poultry Congress*, Ottawa, Can. 1927. Ottawa: Mortimer Co. (1928), pp. 297-300. *Exp. Sta. Rec.* (1928), No. 4, p. 371.]

This is a contribution from the Veterinary Laboratory, Ministry of Agriculture and Forestry of Japan, in which the conclusion is reached that the coccobacillus isolated from the local lesions in the earlier stage of avian diphtheria played some important rôle as a causal agent in the disease. Treatment with the serum taken from the animals hyperimmunized against this organism proved to be uniformly favourable in the prevention of the disease. Indications were that cases treated in the earlier stages of the disease might be benefitted, but that no marked effects followed in advanced cases.

[The Agglutination Test as applied to the Control of Bacillary White Diarrhoea, C. P. FITCH and R. E. LUBBEHUSEN. (In *Report of World's Poultry Congress*, Ottawa, Can., 1927. Ottawa: Mortimer Co. (1928), pp. 356-360; also in *Cornell Vet.*, 18 (1928), No. 1, pp. 19-27.) *Exp. Sta. Rec.*, (1928), No. 4, p. 372.]

In investigational work at the Minnesota Experiment Station with the cloudy reactions met with in the agglutination test, the authors found the precipitate to be largely protein and that little fat is present, thus confirming the findings of Matthews (E. S. R., 55, p. 275). The author's report that the addition of sodium hydroxide as recommended by Matthews is not entirely satisfactory. The change of pH materially affected the results in some cases in serum of weak agglutinating properties. The authors experienced trouble from bacterial contamination, smears from tubes which appeared to be the typical cloudy reaction showing enormous numbers of rod-shaped organisms occurring in long chains when examined under the microscope. A study of these bacteria showed them to belong to the mycoides group. The addition of boric acid solution to the tubes in which the blood was drawn as recommended by A. H. Baker, gave good results. It has been determined that the first prerequisite for a satisfactory test is a serum which is fresh and nearly sterile. The unsatisfactory tests largely occurred when the serum was not fresh or properly drawn. The authors found birds the blood serum of which remained cloudy for eight months, although there were intervals when the cloudiness was not pronounced.

The results of a questionnaire sent by R. A. Runnels to 15 laboratories are reported in tabular form.

In the course of their studies of the disease, the authors in 1925 applied the agglutination test to approximately 400 birds in a flock that had suffered very little if at all from *Salmonella pullorum* infection, but in which it had appeared the preceding season following the purchase of breeding stock. Sixteen birds reacted and were isolated, and the flock was tested at intervals to detect other reactors in the non-infected group and the constancy of reaction in the positive birds, the results of the latter being reported upon in tabular form. The authors found 70·6 per cent. of the reacting birds to show active infection with *S. pullorum*. The reaction of individual birds was variable, due to a negative phase, rendering retests imperative for proper control. Reference is made to the cross-agglutinability of *S. pullorum* and certain members of the colon typhoid group and the difficulty of interpretation of results in the lower serum dilutions.

In the co-operative testing of 92 birds by three laboratories in 1926, the efficiency in detecting infected birds was 91, 87·8, and 87·8 per cent., respectively. The results are considered to emphasise the importance of adopting a uniform technique in conducting the agglutination test. It is pointed out that the efficiency of individual laboratories in detecting infected birds is relatively high. It is considered that the major portion of the discrepancies occur in the negative and suspicious zones, and are caused by so-called "close" reading, in which slight clumping or a partial agglutination in one or more dilutions is interpreted as a positive reaction by some and disregarded by others.

A brief reference is made to the "false" positive and negative reactions, so called because they are unsupported bacteriologically.

FATE OF TUBERCLE BACILLI IN VARIOUS ORGANS.

M. B. LURIE (*Journ. Exper. Med.*, August, 1928, p. 155) has made a quantitative study of the rate of growth of human and bovine tubercle bacilli in different organs. The general technique was to inoculate a series of rabbits intravenously with a given dose of bacilli, to kill one or more at varying intervals of time, and to make a rough estimate of the number of living organisms in the different tissues by inoculating Dorset's and Petroff's egg media, with diluted suspensions. By this means it was found possible to count the colonies that developed and so obtain an idea of the number of bacilli present in the tissue. In rabbits killed two days after inoculation the number of organisms was greatest in the spleen, next to which came the liver, lung, bone marrow, and kidney, in this order. After 0·1 mg. of human bacilli the organisms grow most rapidly in the spleen and lungs, reaching a maximum in the spleen after two weeks, and in the lungs after four weeks. In the liver, bone marrow, and kidney the multiplication was very much less; then destruction set in, so that after two months the numbers were greatly decreased. After a similar dose of bovine bacilli multiplication occurred more slowly, and whereas destruction was present in the spleen, liver, and bone marrow after a preliminary period of growth, in the lungs and kidneys the organisms continued to multiply indefinitely. When a smaller dose of bacilli was used (0·001 mg.) the same

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DIVISIONAL REPORT.

Mid-West and South Wales Division.

SUCCESSFUL MEETING AT CARDIFF.

It is something of a coincidence that, with only a week's interval, practitioners of the West of England and Wales should have followed those of the Eastern Counties in meeting to discuss, also for the first time for many years, the ailments of the dog. As was the case at Lincoln, this Cardiff meeting on the 19th of October, 1928, yielded a time of great interest and value to those who attended. Here, also, the paper which was considered was an excellent one: "Some Gastric and Intestinal Conditions met with in the Dog," by Mr. J. G. Wright, F.R.C.V.S., of Cardiff, and produced a well-sustained discussion. [Both the paper and the report of the discussion, with Mr. Wright's reply, are published at the commencement of this issue of the *Record*.—ED.]

The President (Mr. J. C. Coleman) was in the chair at this meeting, which was held at the Queen's Hotel, and there were also present Messrs. A. S. Adams, W. T. Edwards, E. P. Evans, A. F. Good, R. W. Hall, F. C. Hobbs, J. Howard Jones, J. W. Hall Masheter, C. E. Perry, J. S. Pike, H. S. Robinson, E. Sayer, C. Digby Watkins, W. R. Watson, J. G. Wright, and W. D. Rees, *Hon. Secretary*.

The Minutes of the previous quarterly meeting of the Division, which had received publication in the *Record*, were taken as read and were confirmed and signed.

The Hon. Secretary announced the receipt of apologies for absence from Messrs. W. A. Austin, J. J. Aveston, J. R. Baxter, E. C. Bovett, J. T. Brain, R. Moore, W. Scott, J. H. Stewart, and Major D. M. Storrar.

The PRESIDENT now called upon Mr. Wright to present his paper, and after the essayist's reply to the discussion, proposed a hearty vote of thanks to him, which was accorded with enthusiasm.

The only other matter considered by the meeting was one raised by the President concerning the Milk (Special Designations) Order, 1923.

The PRESIDENT said: I wish to draw the attention of the members of this Division to what I regard as the unfortunate and misleading designations now applied to the various grades of milk under the Milk (Special Designations) Order, 1923, made under the Milk and Dairies Act. I think we, as veterinary surgeons, should associate ourselves with the provision of good milk to the public. We know that the public are not taking up the grades as they should do, and that is probably largely due to the grading itself.

The National Clean Milk Society invited the "National" to appoint delegates to the proposed deputation to the Minister of Health in reference to the Order, and the "National" appointed Professor Wooldridge and Mr. McIntosh. The deputation is to consist of representatives of various societies and associations interested. The trouble is that the designation "Grade A" is most misleading to the public, and I think there is a general feeling that it should not be used, as it is at present, to designate the lowest grade of raw milk recognised, which is not tuberculin-tested, while the majority of consumers naturally assume that "Grade A" is the highest grade. At the same time, we want to be very careful what steps we take in this matter. We do not want to nullify the steps that have been taken to obtain clean milk. There are two more grades designated "A," *viz.*, "Grade A Tuberculin Tested," and "Grade A Certified," and distributors do not encourage the production of these grades; in fact, I am afraid a great many people who started on "Grade A T.T." are relinquishing it. The procedure in this matter, so far as it has gone at present, is as follows:—

Several meetings of those interested were held between October 1927 and January 1928. The Chairman of the National Clean Milk Society (Mr. Wilfred Buckley) wrote to Mr. Chamberlain's Private Secretary in January last, requesting that the Minister of Health, the Minister of Agriculture and the Secretary for Scotland should jointly receive a deputation from the Society in regard to the matter. Mr. Chamberlain's Private Secretary replied stating that the Minister of Health feels that no effective progress can be made as regards re-classification in the absence of some indication of a measure of agreement amongst the various interests affected.

On January 27th, the Secretary of the National Clean Milk Society sent a further letter to Mr. Chamberlain's Private Secretary saying that Mr. Buckley was aware of the difficulties in regard to an agreement amongst producers, but, as the consumers' were the interests chiefly affected and as they were in a vast majority, he hoped that Mr. Chamberlain might soon find himself in a position to revise the designations at present in use.

The Chairman of the National Clean Milk Society on the same date addressed a letter to the Secretary of the Ministry of Agriculture and to the Secretary of the Scottish Office enclosing copies of correspondence between Mr. Chamberlain's Private Secretary and himself, and stating that, in view of the opinion of Mr. Chamberlain expressed in his Private Secretary's letter of January 24th, he did not wish to trouble the Ministers to receive a deputation, but would be grateful if they could be made aware of the suggestions which the proposed deputation from the National Clean Milk Society would have laid before them.

I may tell you, proceeded the PRESIDENT, that I heard the other day that, so far as this matter is concerned at all events, the Clean Milk Society has become defunct. But the work has started, and I was wondering whether you would like to discuss the matter and send a resolution to

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(Continued from previous page.)

sequence of events appeared, but at a slower rate—that is to say, the rate of multiplication and the onset of destruction occurred at a later date. Even six months after the inoculation of human bacilli considerable numbers were still present in the lungs and spleen. The author finds that the growth of the human is faster than that of the bovine bacillus in the rabbit; on the other hand, the human type is destroyed earlier and more completely than the bovine type. With both types destruction occurs first in the liver, spleen, and bone marrow; in the lung and kidney the destruction of the human type is later, while in these organs multiplication of the bovine type continues till the death of the animal. With both types destruction in a given time is more complete in some organs after a large than after a small dose. For these reasons the author concludes that the virulence of a given strain is inversely proportional to its rate of growth in the animal body.—*British Medical Journal*.

the "National," asking them to approach other veterinary associations to consider it, and then take it up with the Ministry of Health.

I would not advise any hurried action, for, in view of the coming election, it may be that the Government would be tardy in taking any particular steps, but a line of action might be considered and determined upon, so that when the new Minister of Health is installed we can bombard him at once to bring about the requisite revision. All we have to do is to prove to the Ministry that a re-classification is required. There are some indications of a measure of agreement amongst the various interests affected.

Would you like to have this matter put on the agenda for discussion at our next meeting, or would you prefer that it be referred to the Council of this Division for consideration and report ?

The members decided upon the latter course.

The meeting then terminated, and "high tea" was subsequently enjoyed by the members present.

W. D. REES, *Hon. Secretary.*

R.A.V.C. Old Comrades' Association.

EIGHTH ANNUAL RE-UNION DINNER.

The action of the War Office in disbanding Divisional Mobile Veterinary Sections of the Territorial Army has many unfortunate aspects which have been made the subject of unsuccessful representation by the N.V.M.A. Among its immediate effects is one which must be viewed with deep regret, and some apprehension, by all who have at heart the interests of that most useful organisation, the R.A.V.C. Old Comrades' Association ; which has thereby received a very severe check in its efforts to establish new branches and to strengthen those already formed. Allusion to this serious factor in the Association's affairs was made both by Colonel Commandant Major-General Sir L. J. Blenkinsop and Principal Hobday on the occasion of the eighth annual re-union dinner, which was held at the Queen's Hotel, Leicester Square, London, on 2nd November, 1928. Here, at least, was no evidence of any set-back, either in numbers or enthusiasm, and in every respect the function was worthy to rank with its seven predecessors as a complete success.

The enjoyment of an excellent dinner was enhanced by music rendered under the direction of Mr. Wally E. Smith, and the loyal toasts were then honoured on the call of the President (General Blenkinsop).

Major F. T. G. HOBDAY, Principal of the Royal Veterinary College, in submitting the toast of "the Guests" said that the toast that stood in his name was one of the most honoured that they could have at such assemblies. Amongst their guests were several who had been there who had been present at many of their gatherings ; which would, indeed, be sadly incomplete without the guests.

Before proceeding further with the subject of his toast there were one or two other matters to which he wished to allude. One was of a pleasant nature, illustrating again the splendid work that the Old Comrades' Association was doing for those of the old Corps who had not been able quite to hold their heads above water—he referred to the Benevolent Fund. That Benevolent Fund had done an enormous amount of good. (Cheers.) From his own personal knowledge he could say that the Fund had been instrumental in enabling quite a number of their men, who would otherwise have been unable to do so, to tide over their difficulties. He desired to bear personal testimony to the courtesy and the ready, prompt, help, the Fund had always been given by Colonel Schofield, Colonel Walker and General Sawyer ; or who ever happened to be the officials of the Fund at any given time. (Hear, hear.) It did not seem generally known that that money was there in order to help deserving cases, and he was certain that no case had ever been refused the fullest consideration, or any deserving case the greatest possible measure of assistance.

He also desired to allude to two deaths which had taken place since they last met together. One was the death of a very old and respected ally of the Corps, the Rev. H. Hayward, who was associated for a considerable period with the group of Veterinary Hospitals and the Church Army Hut at Abbeville. While he was stationed there he always had a warm corner in his heart for the Corps, and his death had left a blank in the hearts of many ; in fact, of everybody who knew him. He was the one man to whom the fellows used to go whenever they were in trouble — a true soldier padre.

The second death was serious from a sentimental point of view ; it was serious also for the Association. He referred to the passing away of the Territorial Mobile Veterinary Sections, which had certainly dealt the Association a hard blow this year. He was sure that all of them sorely regretted their disbandment. (Hear, hear.)

Reverting to the subject of the toast, they had with them representatives of the Veterinary Press—a section of the Press which had always helped the Corps by every means in its power. Then they had with them the inimitable Sergt. O'Reilly who, although he belonged to the Corps, they must always be glad to honour as their guest. This year he (Principal Hobday) was particularly indebted to him, for one of the two clever and artistic cartoons with which he had adorned the menu card was in the nature of an addition to the effort they were making at the Royal Veterinary College, the interests of which he (the speaker) had so much at heart, to raise the money required for the rebuilding of that Institution—an insignificant trifle of a quarter of a million. (Laughter and cheers.)

Another honoured guest, and one who had been with them several times previously, was Mr. Charles Pond, who was well known to everybody in London as a reciter, whose inimitable efforts were always a source of vast enjoyment. (Hear, hear.) He was going to ask Mr. Pond to respond for the guests and to conclude his speech with one of his recitations. (Cheers.)

Mr. CHARLES POND, in reply, said that no one could be better qualified than he to respond to that toast, having regard to the welcome which had always been accorded him whenever he had been privileged to attend their gatherings. But that evening there was something more important than the dinner about which they had to think, and that was the efforts that were being made to collect that "insignificant trifle" of a quarter of a million for the Royal Veterinary College. (Hear, hear.) What was a quarter of a million ? This was an age of millions. He knew the

way in which his friend, Professor Hobday,worked, and he was confident that success would be forthcoming ; he was only too glad to be allowed to take a little interest in the effort, if it was only by way of doing something to help in the very necessary propaganda for the cause, for nothing was accomplished now-a-days without advertisement, and there was nothing, so far as he knew, that required more complete advertisement than the cause to which he had referred. To-day the dog was a part of their life—women could not carry their first-born with greater care than that they bestowed upon the canine in the car. (Laughter). There was thus a greater need to be met to-day than when the College was built and, indeed, in the new building which they contemplated they must allow for an expansion of work. He did not wish to hand bouquets to Professor Hobday, but he was sure that if it was possible to get that " insignificant trifle," the Principal was the man to get it. (Cheers.) Mr. Pond proceeded to outline a proposal to hold a big " show " at the beginning of December, to the programme of which many well-known artistes would contribute, and from which it was hoped that the College Re-building Fund would benefit to the extent of four figures, provided a sufficiently large hall could be found. The speaker concluded by favouring the company with his own well-known, delightfully witty number—one most appropriate to the subject of his appeal—" Evings' Dog Hospital."

The toast of "The Association " was submitted by Major-General Sir L. J. Blenkinsop, who said that since their last dinner the Old Comrades'Association had survived the rather hard knock which it received in the demobilisation of the Teritorial Veterinary Sections. The loss of three branches of the Association, which he deeply regretted to have to report, was directly attributable to this, while there were three other branches, which would have been formed by now, which had not materialised. They had, however, two very strong branches—one at Glasgow and the other at Liverpool—which had weathered the storm and were doing extraordinarily well. (Cheers.) Their accounts, which probably most of them had seen at the annual meeting that afternoon, showed that the Association was not really losing ground, but there was a large number of men who, unfortunately, had not paid their subscriptions for the last year. It had originally been decided that all those in arrear for three years should be struck off the roll of membership, but when it came to the point, the hearts of the Central Committee failed them. He hoped if any of those present came across any member who had not paid they would do their best, in the interests of the Association, to induce them to do so. They hoped they would do better next year.

It gave him great pleasure to propose the toast of " The Association " and to couple with it the names of General Moore and General Sawyer. (Cheers.)

Major-General Sir John Moore, who the first to reply to the enthusiastically-honoured toast, thanked the President, in the name of the members of the Association, for so kindly proposing the toast, and personally for the association of his name and that of General Sawyer with it. He (Sir John) had a very great affection for all movements that kept men and officers together, and particularly in those instances when they had been associated together during the very trying times of war. (Hear, hear.) He was very greatly rejoiced, also, to see there that night many of those officers who served under him in France, having collected their old veterinary retainers round them. (Cheers.) It was a very nice idea, and they hoped its adoption would be maintained in the future.

He could not add very much to what Sir Layton had told them regarding the working of the Association, but he did wish to say that he hoped that those annual dinners would continue for all time. (Cheers.) For his part, he was not so greatly concerned if men did not pay their subscriptions—he thought the essential thing was that they should always meet together in unity and good fellowship.

He was very sorry to hear of the two deaths, as described by Major Hobday. He knew Padre Hayward very well at Abbeville : he was a dear fellow and known personally to a good many of the men who had served at Abbeville. He was very distressed to hear of his death.

He was also very sorry about the condition of affairs in the Territorial Veterinary Sections. Personally, he felt it very much, and ever so many of the Territorial Veterinary Officers and himself had endeavoured to get the Treasury to alter their decision, but without success, and so these Sections succumbed. That action had its evil influence, in that it deprived the country of a field for the instruction of men in view of war ; moreover, these sections constituted a centre from which members of the Association could be recruited, and consequently from all points of view their disbandment was to be deplored. (Hear, hear).

He was delighted to see so excellent a muster that evening. He hoped the success of the function would be maintained in future years, and he wished all those present every good fortune in their various walks of life. He could assure any of the men who had served in the Corps, and particularly those who had served under him in France, that if they became necessitous cases, their cases had only to be brought to his notice and he would see that things were righted. (Cheers).

Major-General H. T. Sawyer, who also responded, said that he was very glad to see that those of the Old Comrades who were present appeared to be in a very prosperous condition, but there were many who had not joined them that evening. Some of these perhaps were not in a position to do so, and he was confident that all present were most anxious to do all that lay in their power to help those men, less fortunate than themselves. (Hear, hear). Several references had been made to the Benevolent Fund. He would stress the point that had already been made that the Fund was in a position to assist the old members of the Corps who came before those responsible for its administration. The Committee would give them every consideration and he was quite sure that if there was any means of helping them they would do it. (Cheers).

The Burma Appointment.

We are asked by the High Commissioner for India to direct the special attention of all members to the particulars of a vacancy for a Research Officer for the Civil Veterinary Department, Government of Burma, which appeared in the advertisement columns of our issue of November 10th, 1928.

As will be seen from that announcement, forms of application and further details may be obtained upon request by postcard to the Secretary to the High Commissioner for India, General Department, 42 Grosvenor Gardens, London, S.W.1.

The last date for the receipt of applications is 31st January, 1929.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Nov. 12th—Meeting of the Editorial Committee N.V.M.A., 10 Gray's Inn Square, W.C.1, at 4-30 p.m.

Nov. 20th—"Dick" College Founder's Day, Address by President of the Royal College of Surgeons.

Nov. 21st—Annual Meeting of the Scottish Metropolitan Division N.V.M.A., at Edinburgh.

Nov. 27th—Meeting of the North Midland Division N.V.M.A. at Sheffield.

Nov. 30th—Meeting of the Royal Counties' Division N.V.M.A. at the Farm Laboratories, National Institute for Medical Research, Mill Hill, N.W., at 2-30 p.m.

Dec. 6th—Special Meeting of the Central Division N.V.M.A., 5 p.m. Extraordinary General Meeting N.V.M.A., 6-15 p.m. Ordinary General Meeting, 6-30 p.m., all at 10 Red Lion Square, W.C.

Personal.

L.C.C. Appointment.—Capt. W. J. Leyshon, M.R.C.V.S., late of the Department of Animal Pathology, Cambridge, has been appointed Veterinary Officer to the London County Council.

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Appointments made in Australia.—W. L. Hindmarsh, B.V.Sc., M.R.C.V.S., D.V.H., District Veterinary Officer, Sydney, to be Senior Veterinary Research Officer at the Glenfield Veterinary Research Station.

T. T. McGrath, M.R.C.V.S., temporary Junior Veterinary Officer, Department of Agriculture, New South Wales, to be Veterinary Research Officer, Glenfield Veterinary Research Station.

T. Herratt, M.R.C.V.S., to be temporary Junior Veterinary Officer, Department of Agriculture, New South Wales.

C. L. O'Gorman, M.R.C.V.S., Senior Veterinary Officer, Department of Agriculture, New South Wales, to be Chairman of the Tick Board of Control, Lismore.

C. J. Sanderson, M.R.C.V.S., Chairman of the Tick Board of Control, Lismore, to be Senior Veterinary Surgeon, Department of Agriculture, New South Wales.

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Zoological Society Pathologist.—Dr. H. H. Scott vacated his position as Pathologist to the Zoological Society last May totake up an important appointment under the Colonial Office. The Society has been fortunate in securing as his successor Lieutenant-Colonel A.E.Hamerton, late R.A.M.C., who began his work at the Prosectorium on November 1. Colonel Hamerton has had a wide experience of disease in many parts of the world and should be able to take full advantage of the opportunities at the Zoo. For some time he was Assistant Director of Pathology at the War Office; as a member of the Sleeping Sickness Commission appointed by the Royal Society he worked in Uganda and Nyasaland with Sir David Bruce in 1908-10, and he has served in Iraq and at Aden. In addition to reports on sleeping sickness, he has published papers dealing with streptococcal infections and rabies.—*The Times.*

Army Veterinary Service.

London Gazette—War Office—Regular Forces.

Oct. 23rd—Lt.-Col. H. Greenfield, O.B.E. (Maj., ret. pay), to be Lt.-Col. (Oct. 23rd), with seniority Feb. 19th, 1927.

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Territorial Army.

Nov. 6th—Maj. W. H. J. Kirk is apptd. D.A.D.V.S. of a Div. (Nov. 1).

Nov. 9—Lt.-Col. E. M. Perry, C.B.E., T.D., F.R.C.V.S., vacates the appt. of a D.A.D.V.S. of a Div. (Nov. 1).

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Movements of Officers.

Major W. M. Rouse arrived home from India on the 2nd November, 1928, and has been posted to Woolwich for duty.

Major D. M. Gillmor was posted from Aldershot to the Western Command on the 6th November, 1928, and is now doing duty at Newport, Mon.

Major J. S. Keane returned to India from leave on the 7th instant.

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Obituary.

It is with regret that we have to announce the death, in India, of Major J. O'Carroll, R.A.V.C., who died on the 29th October at Meerut as a result of fracture of the base of the skull sustained at a race meeting.

He was gazetted to the Regular R.A.V.C. in the rank of Captain, on the 18th November, 1917, after previous service in the Special Reserve.

Major O'Carroll served for four years in France during the Great War, in Mesopotamia and on the Rhine. He was seconded to the Indian Continuous Service Cadre on 1st November, 1924.

The sad death of such a promising officer at the early age of 36 is regretted by all his brother officers.

CORRESPONDENCE.

The R.C.V.S. Register.

To the Editor of The Veterinary Record.

Sir,—The Register of Veterinary Surgeons for 1929 is now being prepared for publication. It is being carefully checked with the forms which have been returned by members giving full particulars of address, qualifications, etc., but a large number of members have not yet returned the form.

As the accuracy of the Register depends largely upon the co-operation of all the members of the profession, I desire to remind all those who have not returned the form, which was sent out with the annual voting paper, that they should do so at once.

The entry of a member's name in the Register is the legal evidence of his qualification to practise, and it is, therefore, extremely important that the particulars given should be accurate.—Yours faithfully, Fred Bullock, *Secretary.*

Royal College of Veterinary Surgeons,
10 Red Lion Square,
London, W.C.1.
November 7th, 1928.

Paraffin as a Parasiticide.

To the Editor of The Veterinary Record.

Sir,—In your issue of 3rd November a veterinary surgeon actually recommends the pouring of neat paraffin over dogs suffering from lice. When I was in practice I often had dogs brought to me suffering agonies from having had this done to them. Some of these dogs were in an agony of terror from the effects of the evaporation of the paraffin; others in an agony of pain from its irritation.

Paraffin is a splendid cheap dressing used as follows:—Hard soap, ½lb.; water, 1 gallon. Boil. Add whilst cooling, and gradually, Kerosene, 2 gallons.

This makes a stock emulsion which is used in proportion of 1 part to from 4 to 6 parts water. It kills lice and nits, and is suitable for use on large animals as well as dogs.—Yours truly, A. S. Leese.

White House, Pewley Hill,
Guildford.
November 5th, 1928.

The Editor acknowledges the receipt of the following:—

Report of a meeting of the Yorkshire Division N.V.M.A., from Mr. T. C. Hall, *Hon. Secretary.*

Communication from Major T. Dalling.

WARDEN

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